Benton County Health Impact Assessment: Accessory Dwelling Units

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Health Promotions Division

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EXECUTIVE SUMMARY

Accessory dwelling units (ADUs) have long been a topic of discussion among Benton County planners and residents. Currently, the County code does not allow accessory dwelling units but does permit temporary medical hardship dwellings and "satellite" bedrooms. However, the Benton County Comprehensive Plan includes a goal to develop standards for accessory dwelling units. Planning staff continues to receive requests from rural residents to construct permanent ADUs for a variety of purposes including accommodating an ill or aging family member. A health impact assessment was completed collaboratively by the County Planning and Health Departments to identify possible health impacts of ADUs and to assess potential policy options.

An initial literature review generated 19 potential positive and negative health impacts of rural accessory dwelling units. Some impacts were applicable to the conditions and issues in Benton County while others were perceived to be less significant. Major positive impacts included: providing living spaces for ill, disabled, or aging persons near family members or caregivers; providing affordable housing opportunities for low and moderate-income persons and small households; allowing living situations for "family-based" or multi-generational housing; generating additional income for homeowners by renting an accessory dwelling unit on their property. Major negative impacts included: allowing development of units in locations far from basic amenities and services; allowing development of units is places without appropriate public transportation; encouraging development in rural areas where auto-dependence is necessary and pedestrian and bicycle activity in limited. Impacts were categorized into four groups: healthy housing; access to goods and services; family and social cohesion; and transportation and mobility. These categories were used to select 18 indicators from the Healthy Development Measurement Tool (HDMT) to complete policy impact assessment. Some indicators were used directly from the HDMT, while others were modified for application in a more rural setting like Benton County.

The HIA Advisory Panel developed five potential policy options from which to assess health impacts: 1) no policy change; 2) restriction of current rules; 3) allow dependent accessory dwelling units; 4) allow independent accessory dwelling units; 5) allow independent accessory dwelling units in urban growth boundary (UGB) areas only. These options were assessed under each of the 18 indicators from the HDMT to determine their impact on current and future health levels.

Findings from the indicator assessment concluded that policy options two (restriction of current rules) and three (allowing dependent dwelling units) had the greatest positive effect on health. Option two benefits health by restricting development of units in locations where residents are dependent on automobiles and have limited access to goods and services. Option three promotes family and social cohesion by allowing residents of ADUs to live near family members and caregivers. Policy option one had no effect on current health levels. Option four (allowing independent ADUs) is similar to dependent ADUs. However, its effect is negative because the larger size of independent ADUs

makes them prone to being used as rentals and not for family or caregiver purposes. The assessment concluded that ADUs have benefits related to affordable housing but the high cost of development and concern from county staff and community members make them unlikely solutions to affordable housing problems. The impact of option four is negative because of its encouragement of units in locations far from services and dependence on automobiles. Option four's geographic restriction limits the number of households that would benefit from its affordable housing and social cohesion benefits, but limits the number of units that would be allowed in rural areas. A summary of policy impacts is available below. A detailed explanation can be found in the body of the report or in Table 7.1 on page 82.

Summary of Policy Impacts:

- Option One (No Policy Change): No effect on health.
- Option Two (Restriction of Current Rules): Positive effect on health
- Option Three (Dependent ADUs): Positive effect on health
- Option Four (Independent ADUs): Negative impact on health
- Option Five (Independent ADUs in UGB Zones): Negative impact on health

Based on the findings from the HDMT assessment, **the Benton County Health Department recommends that the Planning Department and Planning Commission pursue the development of regulations allowing dependent accessory dwelling units per option three**. Options two and three have similar positive impacts on health. However, community desire for permanent ADUs, Health Department objectives of promoting mental and physical health through social cohesion, and language in the comprehensive plan regarding development of ADU regulations makes option three the most suitable option for promoting health.

Option three is recommended with several mitigations: 1) Residents of the ADU must be the homeowner or a relative or caretaker of the homeowner; 2) The units can not be offered as a rental; 3) The policy will be reviewed for unexpected impacts several years after adoption; 4) A "cap" of units permitted annually will be established and can be modified after the initial policy review.

A monitoring plan, available on page 85, has been developed to track the success of this HIA in effecting policy change that promotes the public health of Benton County.

CHAPTER ONE: INTRODUCTION

PROJECT BACKGROUND

The Benton County Planning Department, and many planners nationwide, recognizes the issue of secondary dwelling units as one of the more difficult and multi-faceted topics we confront. Each day staff deal with the challenges of attempting to prohibit or limit the attempts of property owners to establish a "granny flat" or "studio unit" to provide detached living quarters on their property. However, ADUs have potential to promote health, especially for persons with medical hardships.

The Benton County Comprehensive Plan has noted, in Chapter 10, Housing:

"**10.1.5** Benton County shall develop standards for accessory dwelling units, considering factors such as zoning, size limitations, occupancy, and proximity to the principal dwelling."

In a memo to the Board of Commissioners on June 30, 2007, Planning Director Greg Verret brought to the attention of the Board upcoming changes regarding this issue, and requested that the Board initiate this amendment.

> ***"2. Adopt an option for more flexible "family living arrangements", and provide greater clarity about what is allowed and what is not.***
> *We receive many requests from property owners to establish "an apartment for my mother-in-law", "a separate living quarters for my aging parents", etc. These are not cases of medical necessity, where a medical hardship temporary dwelling could be approved; rather, people are wanting flexible arrangements for extended family to live close by but with some degree of independence.*
>
> *For several years, staff and the Planning Commission have been discussing the potential for allowing this type of secondary dwelling unit. Our code does not allow it, except that a duplex is allowed as a conditional use in the Urban Residential zone. We also run into problems with state administrative rules, which allow only one single-family dwelling per parcel in rural residential zones.*

DEFINING THE PROBLEM

The planning, building and environmental health departments have observed that certain problems continue to surface around the issue of accessory dwelling units. They are:

- Enforcement complaints are frequently received from neighbors who see a questionable second dwelling unit being occupied. This may be a room over a garage, or a shop, an RV, or manufactured dwelling. The neighbors want to know why this person is allowed a second dwelling unit. Sometimes the complainant expresses concerns with public health and safety, such as improper sewage disposal. Often the complaint takes the form of "If they are allowed to do this,

why can't I?" We explain that this is currently not allowed for anyone, but these complaints take up a disproportionate amount of time, and are often not resolved to the satisfaction of any party involved.

- Temporary medical hardship dwellings are allowed in any zone, upon approval of a land use permit. This type of dwelling is most often a manufactured home, and a covenant is required to be recorded, stating that the property owner recognizes the temporary nature of this dwelling, and agrees to remove it when no longer needed for the medical hardship. A signed physician's statement is required, stating the specific medical condition, and certifying that without the temporary dwelling the patient would be required to obtain care in a "hospital or care facility".

  Several issues arise in the use of temporary medical hardship dwellings: **1)** Due to the considerable cost incurred in establishing these dwellings, property owners avoid removing them, and attempt to employ them in some other use after they are no longer required for the hardship. This is difficult because building code differs for different uses, and an unused second dwelling becomes an enforcement issue waiting to happen. **2)** Removal of a functioning dwelling calls into question whether this is a sustainable use of resources. **3)** Today's healthcare costs and end-of-life care patterns have prompted a consideration of "aging in place", a progressive concept in which normal aging and final illness are seen as events in a continuum. Life-changing events, such as relocation, are more difficult for families to cope with when coupled with traumatic events such as serious illness. **4)** It is not unusual for a family member to wish to have an elderly parent live nearby so that assistance can be given. Often inquiries are from individuals whose parents are not seriously ill, simply elderly. Our current regulations require us to say that unless the person can get a physician's certification, they cannot obtain a medical hardship dwelling. Sometimes, we fear, it's just a matter of what your doctor will sign.

The Advisory Panel pursued an HIA as a tool to identify the major concerns regarding accessory dwelling units on health. The assessment is intended to inform staff and decision makers on the potential positive and negative impacts and recommend policy options and mitigations that have the most benefit to health.

HEALTH IMPACT ASSESSMENT ADVISORY PANEL

An advisory panel was formed to assist in determining the project's focus and to provide technical assistance throughout the HIA process. The panel was composed of city and county staff members from a variety of backgrounds and professions. Panel members worked collaboratively to identify potential impacts, develop policy alternatives to be assessed, select health indicators and provide additional guidance where needed.

Panel members include:

- Chris Bentley (co-project lead), Senior Planner, Benton County Community Development
- Mac Gillespie (co-project lead), HEAL Coordinator, Benton County Health Department
- Patricia Parsons, Chronic Disease Prevention Coordinator, Benton County Health Department
- Jacqueline Rochefort, Park Planner, City of Corvallis Parks and Recreation
- Robert Richardson, Associate Planner, City of Corvallis Community Development
- Jo Morgan, Bicycle and Pedestrian Coordinator, City of Corvallis Public Works
- Kristin Anderson, Associate Land Use Planner, Benton County Community Development
- Mark Peterson, Engineering Associate, Benton County Public Works
- Holly Fellows, Health Impact Assessment Intern, Benton County Health Department

METHODOLOGY

HIA Objectives and Research Questions

The objective of this HIA is to identify and measure the possible health impacts of allowing accessory dwelling units (ADUs) in Benton County. This objective is achieved by answering several research questions that guide the health assessment and identify areas of focus. These research questions are:

- What are the potential impacts of accessory dwelling units on health?
- What are some ADU policy options that can be adopted in Benton County?
- How many ADU permit requests are projected if a policy is approved?
- What are the specific impacts of these policy options on current health levels?
- What are mitigations to minimize any negative health impacts associated with proposed policy options?
- What, if any, is the policy option that would have the most benefit to health?

The Health Impact Assessment Approach

There are many different types and applications of health impacts assessments. However, they are generally defined as a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population. HIAs are completed before a project, plan or policy has been approved. They are intended to assist decision makers in determining the option that would most benefit public health while still meeting needed community development and land use goals.

The HIA framework recognizes that there are many considerations that go into decision-making aside from health impacts. For this, health promoting mitigations and recommendations are provided to minimize the negative effects of land use decisions on public health. HIAs also look at how projects and policies affect certain disadvantaged populations and identify potential social inequities in existing conditions and proposed alternatives.

The potential impacts identified by HIA are based on evidence collected from a variety of resources including peer-reviewed literature, professional expertise and accepted best practices. Community participation is also a major component of the process and the public should be involved from identifying the problem to the project's evaluation. Community members are seen as key stakeholders in public health and invaluable resources for guidance and local knowledge.

There are five steps to the HIA process: screening, scoping, analysis, communication, and evaluation. The application of each step in this project is discussed below.

Step One: Screening
The screening process involves determining if a HIA is feasible, timely or would contribute to the decision making process. During this stage, the Advisory Panel determined that an HIA on the County's accessory dwelling unit policy would provide important health-based findings on whether to modify the County's current policy. The current policy allows for temporary medical hardship trailers with proof of a medical hardship. However, the County's Planning Department has received requests from residents to construct permanent accessory dwelling units. Staff has considered changing the policy in the past and has drafted possible code changes that would allow accessory units without a need for medical hardship. Advisory panel and staff members also recognized a social inequity concern as residents in incorporated communities within the County such as Corvallis and Philomath are allowed to construct accessory dwelling units whereas rural residents are restricted from the same privilege. This disparity in populations, along with the recognition that ADUs have potential impacts on health, supported completing an HIA to assess potential policy alternatives.

Step Two: Scoping
Scoping involves creating a plan and timeline for conducting a HIA that defines priority issues, research questions and methods, and participant roles. During this step the Advisory Panel identified potential impacts of ADUs on public health. The topic areas that would focus the assessment were identified as healthy housing, access to goods and services, social and family cohesion, and transportation and mobility. Research questions were also developed during scoping based on concerns and issues raised by staff, the Panel and community members.

Step Three: Analysis
There are three parts of the analysis step. The first is to develop a profile of existing community health levels that will serve as a baseline from which to predict change. The second part involves evaluating potential health impacts using qualitative and quantitative

assessment and determining the magnitude of those impacts. In the third step, evidence-based recommendations are developed to improve the recommended policies and minimize any negative effects on health.

For this HIA, information was collected from a variety of sources to establish a baseline health level for rural Benton County including census information, the Benton County Health Status Report, and Benton County GIS data. The baseline levels were then reassessed considering the potential policy alternatives and health-promoting mitigations were made. The assessment and mitigations can be seen in detail in the following sections.

Impact Magnitude Rankings. Each policy option is assessed under the analysis sections of the individual indicators. After assessment, the policies are ranked for its potential impact on health. The rankings are based on the information provided in the existing conditions, considerations and assumptions, and future projections. The HIA team considered these factors and ranked the impacts on a scale including low impact, moderate impact, and high impact. The impact may be positive or negative, and in some cases there is no impact where the policy would not affect current health levels. While these rankings are based on the informed judgments of the team members, quantitative analysis was used were available.

Step Four: Communication
Communication involves reporting the findings and recommendations of the HIA to the public and decision makers. Reporting styles vary based on the HIA's purpose and intended audience. Usually, HIAs are presented in a written report such as this one and accompanied by a visual presentation or PowerPoint. Including the findings in newspapers or on agency websites are also ways of informing the public of the completed process.

Step Five: Evaluation
The last step of the HIA process is evaluation, or monitoring, of the impacts of the HIA on the decision making process. This step also assesses the incorporation of recommendations and proposed mitigations into the adopted plan or policy. Evaluation may include the successes and shortfalls of the HIA process itself and potential uses of HIA in the future.

Healthy Development Measurement Tool

The Healthy Development Measurement Tool (HDMT) was developed by the City of San Francisco Health Department in 2007 as a way to assess the impacts of land use plans and development projects on human health. The tool is a set of metrics and indicators used to determine baseline levels of community health and the potential impacts of proposed plans and policies on those baseline levels. There are six elements of the tool that comprise a healthy city which include environmental stewardship, sustainable and safe transportation, public infrastructure, social cohesion, adequate and healthy housing and health economy. Each element has a set of indicators that are accompanied with health

rationales and potential health promoting mitigations. This HIA does not use all the indicators from each of the six HDMT elements, but rather focused on four elements that captured the possible impacts of ADUs in Benton County.

The HDMT was also significantly modified to serve the needs and uses of the tool in Benton County. HDMT was developed in the very urbanized San Francisco Bay Area, which has a different built environmental and social setting than the County. The set of indicators used in this HIA have been tailored for this specific project and will likely not be suitable in other areas with different characteristics and community health concerns. More information on the San Francisco HDMT can be found at www.thehdmt.org.

Assumptions and Other Considerations

Some information used to analysis the multiple policy options is found in the assumptions and other considerations sections of each indicator. These assumptions and considerations are qualitative findings collected from focus groups, discussions among panel members and staff, and citizen comments. Unlike the existing conditions, they are not easily quantifiable but should be considered when making final recommendations and impact assessments. Because the assumptions and considerations come from a variety of sources, some may be opposing or contradictory but are still relevant to decision makers reviewing this document for guidance on policy adoption and mitigation.

Assessment Study Area

The study area for this assessment is the unincorporated area of Benton County, including the communities of Alsea, Bellfountain, Wren, Kings Valley and Glenbrook. Because the County's jurisdiction excludes incorporated communities the cities of Corvallis, Philomath, North Albany, Adair Village and Monroe are not included. However, some information used to determine health levels and analyze policy options may include data from incorporated cities because alternative sources of information are not currently available.

Assessment Limitations

There are several limitations that may affect the validity and application of this assessment. Limitations have been addressed were possible and disclosed to fully inform decision makers of the restrictions of the document. Limitations include:

- Lack of current data- most existing condition information was collected from 2000 Census Data sets. 2006 Census data was used where available.
- Lack of data on the unincorporated areas of Benton County- most of the data available on existing conditions and health levels is for the County as a whole including the incorporated cities not included in the HIA study area.
- Lack of accessory dwelling unit literature focused on rural areas- literature sources on the benefits of ADUs is generally written from an urban context.

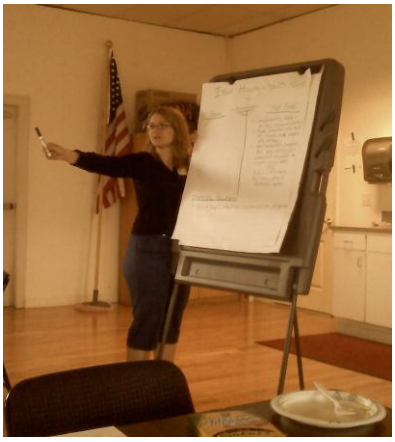
- Lack of quantitative data on policy impacts- policy effects on health indicators can only be estimated because the true number of ADU permit requests is not known. Permit projections are used to quantify impacts where appropriate.
- Dependence on qualitative data- some information used to analyze policy options comes from the qualitative data collected at community meeting and advisory panel meetings. While valuable, qualitative data cannot be used to measure the specific impacts of certain indicators.

Community Meetings

Public participation is a major component of the HIA process. The public is encouraged to assist in identifying the assessment topic, develop research questions, select health indicators and comment on findings and proposed mitigations. The HIA team partnered with Strengthening Rural Families, a local nonprofit agency, to organize two community meetings. The agency was selected because of their previous work on housing issues and established connections with local community members and stakeholders.

Monroe Town Hall Meeting on Housing
The first community meeting was held in the City of Monroe in south Benton County. The event was a town hall meeting format, allowing residents to discuss housing related issues including affordable housing, healthy housing, sanitation and sewer services and accessory dwelling units. Those in attendance included County Health Department employees, local homeowners, renters and owners of rental properties in South Benton County.

The largest concern from citizens was the poor quality of housing due to mold and mildew problems, poor ventilation and pest infestation. Some residents expressed the health concerns associated with substandard housing conditions including asthma and other respiratory problems. Enforcement of illegal accessory dwelling units was also identified as a community concern. Multiple trailers and illegal units on single properties were said to be unsightly, poorly maintained and appeared to be potentially unsafe living spaces. Comments from participants on conditions of housing in south Benton County are included in the existing conditions and analysis sections for the healthy housing indicators. The following quotes from the meeting express some of the concerns and perceived issues from community members:



"There are a lot of cheap, but illegal housing units in Alpine." – a comment related to the problem of unenforced, illegal accessory dwelling units.

"I want my grandson to live with me, but I don't want to live with his caregiver"- a community member expressed a need for a second unit because of a disabled family member's dependence on a live-in caregiver.

"There are very few starter homes out here, because you have to buy the acreage that comes with the house" – A response from a community member when asked the potential benefits of accessory dwelling units as an alternative housing option.

"Manufactured homes work well with temporary medical needs. Once your done with them you pick them up and move them" – a response when asked about the current laws permitting temporary medical hardship trailers.

Alsea Community Workshop

The second community meeting was held in the unincorporated community of Alsea in western Benton County. The meeting followed a "community café" format, which involves assigning small groups discussion topics to identify issues and opportunities for solutions. The topics discussed were the indicator categories used in this assessment: housing, access to goods and services, social connections and transportation. The housing groups also discussed the benefits and health impacts of accessory dwelling units.

A major concern identified from the workshop was the poor accessibility into and out of the Alsea area, especially during winter months when road conditions are poor or unsafe. Poor access also made access to goods and services more difficult for the elderly or people that are unable to drive. Like the Monroe community meeting, Alsea community member talked about the problem of substandard housing and unsafe living conditions. There was also a general sentiment that the County focused its attention and resources on the more populated and urbanized areas of Corvallis and Philomath.

Several individuals at the meeting talked about a personal need for an accessory dwelling unit for an ill or aging family member. A few recognized that medical hardship trailers were currently allowed but that a more permanent structure would be preferred to a manufactured home for aesthetic and comfort reasons. The affordable housing aspects of ADUs were not considered a significant benefit, but rather the social cohesion elements of maintaining a family unit were the most desired and recognized benefits. Overall, participants saw little reason why ADUs should not be allowed in the County.

CHAPTER TWO: ISSUES AND IMPACTS

DEFINITION OF ACCESSORY DWELLING UNIT

There are a variety of definitions for accessory dwelling units (ADUs) but generally the term refers to a self-contained unit within or attached to a single-family dwelling.[1] A unit is considered self-contained if it has bathroom and kitchen facilities separate from the main dwelling. ADUs can be classified into three categories: interior, attached, and detached[2]. Interior units are built within the primary residence such as converted basements and attics. Attached units are constructed on the side or rear of the primary dwelling and have a separate entrance. Detached units are constructed on the same lot as the main residence such as a carriage or guesthouse and are sometimes considered secondary units rather than an accessory unit. Common terms used to describe a specific type of accessory dwelling unit include accessory apartments, elder cottages, accessory cottages, granny units, and garage apartments. These terms vary in some characteristics, but overall represent an accessory dwelling unit.

POTENTIAL IMPACTS ON HEALTH

Potential health impacts of accessory dwelling units were identified during the scoping process. Impacts were collected from Advisory Panel discussions and a comprehensive search of existing peer reviewed and "gray" literature related to ADUs. This activity was aimed at answering the first research question of " what are the potential impacts of accessory dwelling units on health?" These impacts were also used to select the indicators measured with the Healthy Development Measurement Tool.

The following Table 2.1 lists the potential issues and their impacts on health. They are ranked by their predicted magnitude of impact in Benton County ranging from low impact (+), moderate impact (++) and high impact (+++). If the impact is negative, the rankings are expressed with minus signs (-). Rankings were assigned subjectively by the HIA team based on knowledge of County characteristics and potential modifications to the current policy. This ranking system is also used in each indicator analysis section to determine the magnitude of each policy options impact on health. The issues and impacts were also ranked based on the quality of evidence available. Some impacts are deeply rooted in scientific research while others are supported by less verified sources. These differences are necessary to note when considering the identified impacts.

[1] Municipal Research and Services Center of Washington. (October 1995) Accessory Dwelling Units-Report No. 33. Accessed at http://www.mrsc.org/Publications/textadu.aspx#def

[2] Sage Computing, Inc. Reston, VA. (June 2008) Accessory Dwelling Unit: Case Study. Prepared for the United States Department of Housing and Urban Development Office of Policy Development and Research. Accessed at http://www.huduser.org/Publications/PDF/adu.pdf

Table 2.1-Accessory Dwelling Unit Issues and Health Impacts			
Additional Income Source	**Impact on Health**	**Potential Magnitude Of Impact**	**Quality of Evidence**
ADUs provide additional income for homeowners, making homes more affordable. Elderly and ill homeowners are better able to afford mortgage payments and property taxes as they transition into fixed or reduced incomes. [3] [4]	• Reduces stress related to financial hardship (mental health) • Increases affordability of home • Provides income for other uses (healthcare, food, energy, recreation)	+++	High
Inaccessibility to Public Transit	**Impact on Health**		
Rural areas of Benton County do not receive adequate public transit services.[5]	• Decreased mobility, Isolation • Financial burden imposed on travelling to basic services and amenities. • Decreased access to medical care/food markets	-	High
Affordable Housing Option	**Impact on Health**		
ADUs provide an affordable housing option for moderate and low-income families and individuals.[6] [7] [8]	• Reduced housing costs free up disposable income for other uses (food, energy, health care) • Increased security promotes mental health • Reduces minority and low income segregation • Reduces stress of housing displacement	+++	High
Distance From Food Markets	**Impact on Health**		
Residents of rural ADUs are further from healthy and affordable food options compared to urban dwellers.[9]	• Unhealthy eating and malnutrition • Hunger/food insecurity • Increased financial burden to purchasing food, food options more expensive	-	High
Caregiver Living Space	**Impact on Health**		
ADUs create living spaces for caregivers of elderly homeowners allowing for 24 hour care. [10]	• Increased security and companionship • Decreases risk of serious injury and malnutrition • Decreased cost of full-time care	+++	Moderate
Reduced Walkability to Amenities	**Impact on Health**		

[3] Landcom. (2006) Accessory Dwelling Units: Playing a Significant Role in Market Based Affordable Housing.
[4] Hare, Patrick. Accessory Units: An Increasing Source of Affordable Housing. Journal of Public Management. Volume 1:5-8. (September 1991)
[5] Benton County Health Impact Assessment Advisory Panel (2010)
[6] Atlanta Regional Commission. (August 2007) Accessory Dwelling Units. Accessed at http://www.atlantaregional.com/documents/ Accessory_Dwelling_Units_.pdf
[7] EDAW. August 14th, 2002 San Juan County, Washington, ADU Analysis.
[8] Municipal Research and Services Center. Accessory Dwelling Units. Report No. 33. 1995. Accessed at http://www.mrsc.org/Publications/textadu.aspx
[9] Benton County Health Impact Assessment Advisory Panel (2010)
[10] Caro, Frances. (2006) Family and Aging Policy. Journal of Aging and Social Policy. Volume 18(3/4)

Low-density rural areas in Benton County lack pedestrian and bicycle access to most amenities and services. Lack of pedestrian and bicycle infrastructure (sidewalks, crosswalks, bike lanes, etc) make walking inconvenient and unsafe.[11]	• Inactivity and reduced daily exercise • Obesity • Increased risk of pedestrian/bicycle accidents	--	High
Increased Distance to Medical Care	**Impact on Health**		
Rural residents are less likely to obtain certain medical care and preventative health care services.[12]	• Less likely to receive regular medical care • Decreased access to medicines • Short term and chronic illness more likely • Decrease in overall health	--	Moderate
"Ageing in Place"	**Impact on Health**		
Because of the disabilities associated with aging, many elderly homeowners are unable to maintain a single family home and are forced into lower maintenance units. The fixed income of seniors also makes it difficult for them to afford their properties as they age. ADUs allow seniors to stay at home until death by providing additional income to maintain the home, and living quarters for a groundkeeper or family member.[13] [14]	• Increased security and comfort • Improved mental health • Reduced financial burden of relocation • Reduced end of life stress	+++	High
Increased Auto Dependence	**Impact on Health**		
Rural dwellers are more auto-dependent than urban dwellers because of low density and greater distances between uses.[14]	• Decreased mobility, increased inactivity • Higher rates of obesity • Increased financial burden • Longer travel times, greater stress • Increased air pollution • Risk of automobile accidents	--	High
Housing for Elderly/Ill Family Members	**Impact on Health**		
• ADUs provide accommodations for family members to care for an aging relative. [15] • Children often become the primary caregivers of the elderly. ADUs provide living quarters for rural households to care for aging family members.[16]	• Reduced financial burden of caring for elderly/ill (more affordable than nursing facilities) • Maintaining family unit • Improved mental health for caregivers	++	High
Maintaining a Family Unit	**Impact on Health**		

[11] Benton County Health Impact Assessment Advisory Panel (2010)
[12] American Journal of Preventative Medicine (2001) (*full citation unknown)*
[13] King, Leigh Ann. Rocky Mountain Land Institute. Housing Diversity and Accessibility (January 2008)
[14] Aging in Place Initiative. (2010) Accessed at http://www.aginginplaceinitiative.org.
[15] Caro, Frances. (2006) Family and Aging Policy. Journal of Aging and Social Policy. Volume 18(3/4)
[16] Housingpolicy.org. Accessory Dwelling Units. (Accessed 2010)

Accessory dwelling units allow for multiple generations of a family to live together on a single property. (Ex, grandparents living in unit, or college-aged children living in unit) [17]	• Improved mental health/happiness • Increased security and companionship • Reduced burden of child care (grandparents in unit caring of for grandchildren)	++	Moderate
Senior Friendly Living Quarters	**Impact of Health**		
Accessory dwelling units allow for customized living quarters for elderly or disabled residents (i.e. entrance ramps, railings, widened doorways, other handicapped accessibility features) [18]	• Reduced risk of physical injury • Increased comfort (both physical and mental comfort)	++	Low
Potential Increase in Crime	**Impact on Health**		
San Juan County, Washington noticed an increase in calls for police assistance after ADUs were allowed in the rural county. A report suggested an increase in trespassing complaints. Conflicts were also reported between tenants of the ADUs and the primary house or with neighboring residents. [19]	• Increased stress associated with conflict • Possibility of physical harm from others • Reduced safety and security	-	Low
Housing Opportunity for Handicapped	**Impact on Health**		
• "Handicapped people often face limited opportunities for housing that can meet their special needs. ADUs can provide many handicapped individuals with the opportunity to live independently in their own home but close enough to others to provide needed assistance."[20] • "Adaptable" accessory dwelling units can be tailored to the specific needs of the resident's disability.[21]	• Increased security and comfort • Increased independence • Reduced financial burden of housing	++	Moderate
Trading Rent for Needed Services	**Impact on Health**		
• Homeowners can exchange rent for needed services such as property maintenance, babysitting, or care giving. These services make it easier for homeowners to remain at home and reduce the cost of required care. [22]	• Reduced financial burden of receiving care • Increases affordability of needed services, frees income for other uses (health care, food, energy)	++	High

[17] Liebig, Phoebe. Zoning, Accessory Dwelling Units, and Family Caregiving: Issues, Trends and Recommendations. Journal of Aging and Social Policy. 18(3/4): 155-172. 2006.
[18] Municipal Research and Services Center of Washington. (1990) Accessory Dwelling Units: Issues and Impacts.
[19] EDAW. August 14th, 2002 San Juan County, Washington, ADU Analysis.
[20] Municipal Research and Services Center of Washington. (October 1995) Accessory Dwelling Units-Report No. 33. Accessed at http://www.mrsc.org/Publications/textadu.aspx#def
[21] King, Leigh Ann. Rocky Mountain Land Institute. Housing Diversity and Accessibility. January 2008.
[22] R. L. Cobb. Zoning for Accessory Dwelling Units. Zoning News. January 1997.

• Those providing services receive reduced or free rent, making housing more affordable. [23]	• Increased comfort and security • Reduced stress of maintaining property • Companionship		
Encourage Better Property Maintenance	**Impact on Health**		
Income from unit, or assistance from the unit residents, allows property owners to better maintain their property. Improved property maintenance contributed to more attractive and desirable neighborhoods.[24]	• Improved mental health (little impact)	+	Low
Increased Vehicle Emissions	**Impact on Health**		
Increased VMT generated from rural uses[25] increases pollutants associated with vehicle emissions.	• Increased respiratory illnesses • Environmental concerns	-	High
Reduce Number of Illegal Conversions	**Impact of Health**		
Illegal ADUs are uninspected by building officials and pose a threat to personal safety, infrastructure, and sanitation services. Allowing legal ADUs may reduce the number of illegal units and improve the safety and livability of secondary units in the rural areas. [26]	• Reduce health risks and stress associated with overcrowding • Reduces risk of illness from poor sanitation • Reduces risk of illness/injury from unsafe structures, faulty plumbing and electricity • Reduces discomfort from poor heating (in units without proper heating or insulation)	+	Low
Distance from Schools and Child Care	**Impact on Health**		
Rural residences are greater distances from schools and child care facilities increasing the burden of caring for young children.[27]	• Increased stress • Increased financial burden of providing childcare • Inability to walk or bike to school, decrease in daily physical activity	-	Moderate

ACCESSORY DWELLING UNIT POLICY OPTIONS

Five ADU policy options were created by the advisory panel that represent a range of permitted uses from restricting current regulations to allowing a complete accessory dwelling unit. The indicators will be assessed considering each option in order to determine which policy options would have the greatest positive and negative impacts on health. Decision makers may decide to adopt one of the proposed policy options as is, or

[23] Municipal Research and Services Center of Washington. (October 1995) Accessory Dwelling Units-Report No. 33. Accessed at http://www.mrsc.org/Publications/textadu.aspx#def

[24] Municipal Research and Services Center of Washington. (October 1995) Accessory Dwelling Units-Report No. 33. Accessed at http://www.mrsc.org/Publications/textadu.aspx#def

[25] Zhou, Bin. (November 2007) Self-Selection in Home Choice: Use of Treatment Effects in Evaluating the Relationship Between the Built Environment and Travel Behavior. University of Texas at Austin.

[26] Municipal Research and Services Center of Washington. (1990) Accessory Dwelling Units: Issues and Impacts.

[27] Benton County Health Impact Assessment Advisory Panel. 2010.

adopt an option with additional mitigations and alterations. The proposed policy options assessed in the HIA are:

Policy Option One: No Policy Change
The first policy option is to take no action, or maintain the currently implemented development code allowing temporary medical hardship dwellings. Aside from being an option for decision makers, a "no change" is necessary to establish current baseline levels of health from which to compare other proposed policy alternatives. There are two elements to this policy:

Element A

- Manufactured units allowed with documented medical hardship;
- Unit must be occupied by family members or a caretaker;
- Must be removed from the property once the need related to the hardship subsides.

Element B

- Allow permanent attached or detached "guest house" or "satellite bedroom" unit;
- Does not contain complete kitchen and living facilities;
- The unit cannot be offered as a rental unit.

Policy Option Two: Restriction of Current Rules
The second option is a restriction of the currently implemented policy (option one) allowing temporary medical hardship dwellings and "satellite bedrooms" or "guest houses." In this option, temporary medical hardship dwellings would still be allowed through the current permitting process but "satellite bedrooms" and "guest houses" would no longer be allowed. This option would not require removal of existing secondary bedroom structures but rather would prohibit their approval and construction in the future.

Policy Option Three: Dependent Accessory Dwelling Unit
The third option to be assessed is an expansion of the current development code by allowing "dependent" accessory dwelling units. Under this alternative, the elements of option one would still be allowed and ADUs would be permitted with the following characteristics:

- Allow permanent attached or detached accessory unit;
- Either the primary dwelling or the ADU shall be occupied by the property owner;
- The unit may be offered for rent as approved through a CUP process;
- May contain kitchen, bathroom and sleeping areas that are completely independent from the primary dwelling.
- Unit considered secondary and subordinate to the primary dwelling, and together they are considered a single dwelling unit.

Policy Option Four: Independent Accessory Dwelling Unit
Policy option four is similar to policy option three; however, the allowed unit has fewer restrictions and is considered more "independent" in its allowed features and relationship with the primary dwelling. This option is considered the most liberal on the spectrum of

options allowing the most freedom from current development code restrictions. Specifics of this policy alternative are:

- Allow permanent attached or detached accessory unit;
- Either the primary dwelling or the ADU shall be occupied by the property owner;
- The unit may be offered for rent as approved through a CUP process;
- May contain kitchen, bathroom and sleeping areas that are completely independent from the primary dwelling.

Policy Option Five: Independent Accessory Dwelling Unit with UGB/RUC Restriction

Policy option five is similar to policy option three in the type and uses allowed of independent ADUs. However, in this option independent units are only allowed within urban growth boundaries (UGB) and rural unincorporated communities (RUC). These areas are closer to existing urban services that are not available in the outer unincorporated parts of the County. This option is expected to have fewer negative impacts related to accessibility of goods, services and public amenities compared to options two and three that do not restrict the location of units.

PROJECTED ADUS ANNUALLY

If a policy allowing ADUs is adopted in Benton County, approximately 8 units will be created annually.

Total Projected ADUs Annually

In 2006 there were approximately 20,441 detached single-family dwelling units in Benton County, an estimated 8,437 of which are located in the unincorporated parts of the County. Existing literature suggests that there will be one ADU created per year per 1,000 detached single-family units.[28] If this estimate is correct, Benton County can expect to have approximately 8-9 units constructed annually. For the purpose of this assessment, it will be approximated that the County will have 8 units created annually.

One limitation to findings from existing literature is the unknown differences in permit requests among urban and rural places. It is not known whether rural counties like Benton County will have more or fewer requests than the urban jurisdictions where these studies were likely conducted. To test the reliability of the literature, the projections were compared to permit requests in Douglas County, Oregon where an ADU policy is currently implemented. In 2007, there were 20 ADU permits on file for residences in resource zones. That number dropped significantly in 2008 and 2009 to 6 and 4 permits

[28] Hare, Patrick. Accessory Units: An Increasing Source of Affordable Housing. Journal of Public Management. Volume 1:5-8. (September 1991)

on files, respectively.[29] A planner suggested the economic downturn could have contributed to fewer permits and building projects. Douglas County also allows ADUs in rural residential zones that meet density requirements. The number of those permits was not known but estimated to be similar to requests in resource zones. Averaging the three years, and assuming that residential rural ADUs are the same as resource zone permits, Douglas County had approximately 20 permits annually.

Douglas County has approximately 17,807 detached single-family dwelling units. If the literature projections are correct, Douglas County should have around 18 units annually. This comparison suggests that the literature projections are fairly accurate, but perhaps slightly underestimated in rural areas similar to Benton County.

Another way to project future ADU permitting is to look at the number of ADU inquires from Benton County residents in the past. The County Planning Director estimated 10-15 inquires annually. It is not known if those parties would have completed a permit if ADUs were allowed, but this figure provides insight into potential demand. The projected 8 permits is below annual requests, however could be feasible assuming that not every homeowner that requested information would build a unit (which is often the case for other projects requiring permits).

Projected ADUs in UGB Areas

Option Five allows ADUs in urban growth boundary areas only. This option, if implemented, would have fewer permit requests because of the restricted location and number of units where ADUs would be permitted. There are 3,520 total housing units in UGB areas, of which, approximately 2,816 are single-family detached homes (Census 2000). Using the projection of 1 ADU permit request per 1,000 single-family dwellings, an estimated 2.8, or roughly three units can be expected annually. This projected figure will be used throughout the report when assessing the impacts of Option Five.

PERMIT FEES

Temporary Medical Hardship Trailers

Total County fees for a medical hardship manufactured home is $455. In 2009, the permitted temporary medical hardship trailers ranged in square footage from 1,248 sq.ft. to 1,848 sq.ft. with an average of 1,670 sq.ft. If the property is in the school excise tax area, there is an additional $1/sq.ft. The tax applies to properties within the Corvallis, Monroe and Albany school districts. Properties in the Philomath and Alsea school districts are not required to pay an excise fee. With the average manufactured home being 1,670 sq. ft., this would mean a total fee, including the school tax, of $2,125.

[29] Douglas County, Oregon Planning Department. (June 2010) Phone interview.

Newly Constructed Accessory Dwelling Units

County fees for new residential units, including ADUs, are based on value but are typically $1.50/square foot. For example, and 800 square foot would have a total building permit fee of $1,200 ($1.50 x 800 square feet). New buildings and additions are also subject to the excise school tax of $1/square foot where applicable. An 800 square foot ADU in a school district with a school tax would have a total of $2,000 in taxes and fees ($1 x 800 sq. ft + $1,200).

RESIDENTS OF ACCESSORY DWELLING UNITS

ADUs are suitable living accommodations for a variety of individuals and households. Some common ADU dwellers are[30]:

- Middle-aged or elderly homeowners who rent an ADU to bring in additional income to prepare for "aging in place";
- Elderly individuals who want to live near their children in the primary dwelling;
- Homeowners who are frequently out of town and want someone to look after and maintain the primary dwelling;
- Caregivers of an elderly homeowner or disabled resident;
- Disabled persons who want independence from family members in the primary dwelling but require some dependence;
- Young adults or college students wanting to live near their parents year round or seasonally;
- Lower-income renting households of one or two persons (potentially more depending on the unit);
- Caregivers or relatives who care for children in the primary dwelling;
- Young homeowners looking to supplement income and reduce the burden of mortgage payments by renting an ADU

[30] Giles, Lauren. (2007) Accessory Apartments. Land Use Clinic University of Georgia.

CHAPTER THREE: HEALTHY HOUSING

HEALTHY HOUSING INDICATORS

A preliminary literature review identified several impacts of accessory dwelling units on housing conditions that have an effect on health (see impacts chart for specific affects related to housing). Four Healthy Housing Indicators were selected and modified from the San Francisco Healthy Development Measurement Tool (HDMT) to assess the identified potential impacts in Benton County. These indicators are:

- HH.1: proportion of households paying more than 30% or 50% of their total household income on gross rent or mortgage;
- HH.2: proportion of housing unit types to housing need by household size and income;
- HH.3: Proportion of households living below the poverty line;
- HH.4: Proportion of households living in overcrowded and substandard conditions.

Summary of Chapter Impacts:

- Allowing accessory dwelling units in Benton County would positively impact the indicators of health related to healthy housing opportunities.
- Policy Option Five would have the greatest positive impact on health.
- Policy Option Two would have the greatest negative impact on health.

HO.1: Portion of renting households paying more than 30% or 50% of their household income on gross rent or mortgage

Health Based Rationale

The United Stated Department of Housing and Urban Development categorizes households as "cost-burdened" if they spend more than 30% of their total income on housing costs. Households are considered "severely cost-burdened" if they spend more than 50% of their total income on housing costs. Housing is considered affordable if costs consume less than 30% of household income.[31]

Spending too much on housing results in a loss of income for other uses such as healthy food options, transportation and utilities, health care, and recreational activities.
[32]Overpaying for housing can also result in an inability to make mortgage and rent

[31] Florida Housing Data Clearing House. Cost Burden Definition from HUD. Accessed 7 May 2010. http://flhousingdata.shimberg.ufl.edu/apps/azindex.pl?t=4

[32] Cohen R. (2007) The Positive Impacts of Affordable Housing on Health: A Research Summary. Enterprise Community Partners, Center for Housing Policy.

payments, which can cause anxiety and force households to relocate to more affordable communities. Households paying too much for housing may also accept substandard housing conditions or live with other households resulting in overcrowded conditions. [33]

Lack of affordable housing can also lead to homelessness. Homeless persons have higher risks for other ailments and had age adjusted death rates four times higher than the general population.[34] Homeless children also face depression, behavioral problems and poor academic performance. [35]

Existing Conditions

Median Household Income:

Median household income in 1999 dollars in Benton County was $41,897. This is higher than the state median of $40,916 and roughly equivalent to the national median of $41,994. Median household income in 2008 was 50,350, compared to the state median of $50,165 and the national median of $52,175. The median increased by 25% between 1999 and 2008. [36]

Average Home Price:

In 2000, the average price of a single-family housing unit in Benton County was $169,800. In 2008 the U.S. census estimated the average price to be $257,700, for an increase of 51.79 percent. Corvallis had a much higher average home price in 2000 ($159,600) compared to the other more rural incorporated communities of Monroe ($97,500), Adair Village ($137,500), and Philomath ($136,100). However, the total Benton County average of $169,800 suggests that homes in the unincorporated areas are much higher than those in the incorporated cities, in part because of the acreage associated with rural parcels. [31]

Rent/Mortgage as Percentage of Household Income:

Table 3.1-Monthly Gross Rent As a Percentage of Household Income

	Corvallis	Philomath	Monroe	Adair Village	Benton County Total	Unincorporated County
Less than 15.0%	1,367 (11.76%)	79 (15.01%)	21 (21.87%)	28 (29.78%)	1,835 (13.35%)	340 (24.02%)
15.0 to 19.9%	1,125 (9.68%)	96 (18.25%)	18 (18.75%)	23 (24.46%)	1,371 (9.97%)	109 (7.70%)

[33] San Francisco Department of Public Health. (May 2004) Program on Health, Equity, and Sustainability. The Case for Housing Impacts Assessment: The human health and social impacts of inadequate housing and their consideration in CEQA policy and practice. Available at: http://dphwww.sfdph.org/phes/publications/PHES_publications.htm

[34] Barrow SM, Herman DB, Cordova P, Stuening EL. (1999) Mortality among homeless shelter residents in New York City. American Journal of Public Health 1999:529-534.

[35] Zima BT, Wells KB, Freeman HE. (1994) Emotional and behavioral problems and severe academic delays among sheltered homeless children in Los Angeles County. American Journal of Public Health. 84:260-2

[36] US Census 2000. Accessed at http://factfinder.census.gov/home/saff/main.html?_lang=en

20.0 to 24.9%	1,330 (11.45%)	73 (13.87%)	18 (18.75%)	12 (12.76%)	1,525 (11.09%)	92 (6.50%)
25.0 to 29.9%	983 (8.46%)	54 (10.26%)	11 (11.45%)	6 (6.28%)	1,491 (10.84%)	440 (31.09%)
30.0 to 34.9%	688 (5.92%)	66 (12.54%)	2 (2.08%)	5 (5.31%)	851 (6.19%)	90 (6.36%)
35.0% or more	6,122 (52.70%)	158 (30.0%)	26 (27.08%)	20 (21.27%)	6,670 (48.53%)	344 (24.31%)
Total	**11,615**	**526**	**96**	**94**	**13743**	**1415**

Source: US Census (2000)

Table 3.2-Monthly Mortgage As a Percentage of Household Income

	Corvallis	Philomath	Monroe	Adair Village	Benton County Total	Unincorporated County
Less than 20%	2,338 (37.02%)	316 (43.52%)	51 (44.34%)	26 (39.39%)	5,029 (39.38%)	2,298 (41.42%)
20.0 to 24.9%	1,077 (17.05%)	116 (15.97%)	12 (10.43%)	13 (19.69%)	2,206 (17.27%)	988 (17.81%)
25.0 to 29.9%	820 (12.98%)	109 (15.01%)	13 (11.30%)	6 (9.09%)	1,484 (11.62%)	536 (9.66%)
30.0 to 34.9%	548 (8.67%)	53 (7.30%)	2 (1.73%)	9 (13.63%)	1,023 (8.01%)	411 (7.40%)
35.0 or more %	1,532 (24.25%)	132 (18.18%)	37 (32.17%)	12 (18.18%)	3,027 (23.70%)	1,314 (23.68%)
Total	**6,315**	**726**	**115**	**66**	**12,769**	**5,547**

Source: US Census (2000)

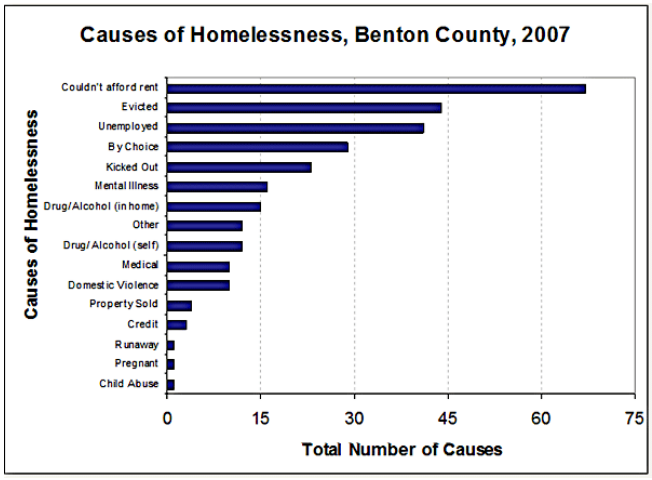
According to the information provided in the census data, 30.67% of households in the unincorporated County pay more than thirty percent of their household income on rent. These households are classified by the United States Department of Housing and Urban Development as being cost-burdened, meaning these households likely have reduced income for other basic necessities. Likewise, 31.08% of households with a mortgage spend thirty percent or more of their total income on housing costs. These households too are cost burdened.

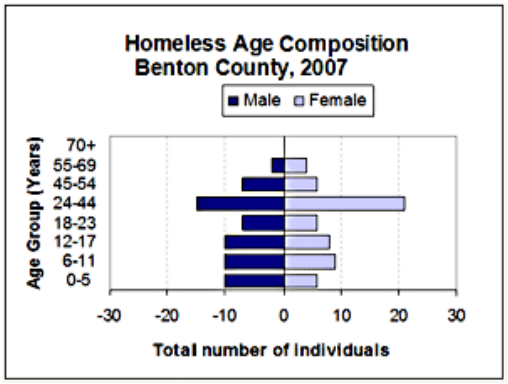
The unincorporated County is comparable to the other communities in both mortgage and renter proportions. Corvallis has a noticeably high proportion of renters paying more than 35% of total income on housing possibly because of the City's large and lower income student population.

The Census information does not include the percentage of households paying more than fifty percent of total income on housing so the percentage of severely cost-burdened households is not known.

Homelessness:

Another indicator of high housing costs and cost-burden individuals and families is the prevalence of homelessness in a community. As apparent in the following figures, the vast majority of homeless cases in Benton County are related to an inability to afford rent, being evicted or being unemployed. Comparatively, a smaller portion of cases is associated with drug and alcohol causes and mental illnesses.





Figures 3.3 (Source: Benton County Health Status Report, 2010)

Analysis of Policy Options

Assumptions:

- The existing conditions show that a considerable proportion of households are "cost-burdened".
- Roughly 30% of rent-paying households in the unincorporated County spend more than 30% of their total income on housing. These households would benefit from more affordable housing options of the additional income that an ADU would provide.
- Roughly 30% of mortgage-paying households in the unincorporated County spend more than 30% of total income on housing costs. These households would benefit from the additional income generated from renting ADUs to pay for housing costs and other basic needs.
- Dependent ADUs are most likely to house persons with medical needs who receive care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other considerations:

- Accessory dwelling unit permitting costs can exceed $2,000 per permit. The homeowner pays these costs to the County for processing and review of the permit request, land use application, and building fees. Lower income families looking to construct ADUs for relief from high monthly housing costs would have to pay these permitting fees, making ADUs and their benefits more difficult for those families to obtain.
- Constructing new ADUs can be costly. Building officials estimated new constructing can cost anywhere from $50/sq. ft. to $200/sq. ft. depending on the quality. Assuming the most modest construction costs of $50/sq. ft, 800-foot ADUs would cost $40,000 to construct. With County fees and school taxes the total cost would be as much as $4,200. Families looking to construct ADUs to gain additional income from renting the unit would likely be unable to afford the initial investment of construction.

Policy Option One: No Policy Change:
No measurable change to indicator or current health levels. **Impact on health: none (*).**

Policy Option Two: Restriction of Current Rules:
Option two will have a small negative impact on health as people living in satellite bedrooms may be unable to live at the property if the additional bedrooms were not allowed. Existing units would not be removed under the policy, but future property owners would not be permitted to build additional rooms and people would not benefit from the accommodations in family dwelling units. The current and future population of satellite bedrooms and guesthouses is unknown, so the impact will be estimated to be low. **Impact on health: small negative impact (-).**

Policy Option Three: Dependent Accessory Dwelling Unit:
This policy option would provide some positive benefit to the health indicator. Dependent accessory dwellings are suitable for ill, aging or disabled family members or caretakers. Homeowners would benefit from having a more affordable option to care for a loved one, as opposed to boarding an aging or ill family member in a care facility. Dependent ADUs could also be made available for rent, thereby increasing the availability of low cost housing and increasing the variety of the housing stock. The option is projected to generate 8 dependent dwelling units. This would not significantly expand available affordable housing but would benefit several families needing alternative or more affordable housing arrangements. However, because of the high estimated costs of constructing an ADU and the smaller size of dependent ADUs, it is unlikely that they would be appropriate rental units. Option three would provide healthy housing benefits for families looking to house loved ones, but not for lower income families looking for affordable alternatives. **Impact on health: low positive benefit (+).**

Policy Option Four: Independent Accessory Dwelling Unit: This policy option would provide the greatest positive benefit to the health indicator. A significant proportion of renters in the unincorporated county (24.31%) pay more than 35% of their household

income on monthly gross rent. This option would approximately generate 8 independent ADUs annually that could potentially be used as rental units and would provide a greater stock of affordable housing units. The addition of 8 units is less than one percent of the total stock, which would have a fairly insignificant impact on housing options. Families paying high percentages of total income on housing could also use the accessory dwelling unit for additional income to assist in mortgages or rental payments. However, because of the high costs of development, homeowners would not benefit significantly from ADUs as rentals. Rather, the persons or families renting the ADU would benefit from an affordable option. **Impact on health: moderate positive benefit (++).**

Policy Option Five: Independent Accessory Dwelling Unit in UGB Zones: This policy option would have a positive benefit to health indicator similarly to policy option four but at a smaller scale. Because ADUs are restricted in areas outside UGB, fewer units would be allowed meaning fewer individual and households would benefit from the affordability of ADUs as rentals. This option could potentially generate 3 or more ADUs annually in UGB and RUC zones, or 5 less than option four. Homeowners outside these zones would not benefit from having ADUs to provide housing for family members or to trade rooms for needed services such as care giving or property maintenance. Policy option five will reduce the proportion of households paying more than 30% of total income on housing costs but less than policy options three and four. **Impact on health: low positive benefit (+).**

HO.2: Proportion of housing unit types to housing need by household size and income

Health Based Rationale

There are several adverse effects associated with households living in housing units that are not appropriate to the household's size and income level. Households residing in too small or unaffordable units because of a lack of single-family affordable housing can experience overcrowded and substandard living conditions. Overcrowding and substandard conditions increase anxiety and conflict between family members, increase the risk of infectious and respiratory diseases, and are associated with decreased academic performance for school aged children.[37] Paying too much for housing costs also decreases income for other uses such as healthy food options, transportation, heating and utility services, health care and recreational activities.

Overpriced housing can also force households to share units or move to communities with more affordable options. Frequent relocation can results in loss of one's job, which reduces sense of security, increases conflict and friction between family members, and decreased social relationships. Research also suggests that frequent relocation for young

[37] Shaw, M. (2004). Housing and Public Health. Annual Review of Public Health, 25(1), 397-418. doi:10.1146/annurev.publhealth.25.101802.123036.

children increases behavioral problems, learning difficulties, and increases the risk of drug use as teenagers.[38] [39]

Existing Conditions

Average Household Size:

Table 3.4- Average Household Size						
	Corvallis	Philomath	Monroe	Adair Village	Benton County	Unincorporated County
Average Persons	2.26	2.85	2.70	3.15	2.43	N/A

Source: US Census (2000)

The average household in Benton County has 2.43 persons. This is lower than both the state and national household sizes at 2.51 and 2.59, respectively.[40] No information on the average household size in the unincorporated County is available. However, it can be assumed that Corvallis' relatively low average has lowered the County average. Households in the unincorporated County are likely more reflective of the higher averages in Monroe (2.70) and Adair Village (3.15).

Existing Housing Stock:

Table 3.5- Number/Percentage of Housing Units by Type						
	Corvallis	Philomath	Monroe	Adair Village	Benton County Total	Unincorporated County
1-unit, detached	10,845 (47.35%)	921 (62.56%)	190 (70.63%)	48 (26.96%)	20,441 (58.01%)	8,437 (80.9%)
1-unit, attached	1,099 (4.79%)	94 (6.38%)	0 (0%)	83 (46.62%)	1,325 (3.76%)	49 (0.46%)
2 units	1,155 (5.04%)	119 (8.08%)	5 (1.85%)	29 (16.29%)	1,625 (4.6%)	317 (3.04%)
3 or 4 units	1,713 (7.47%)	149 (10.12%)	24 (8.92%)	6 (3.37%)	1,909 (5.41%)	17 (0.16%)
5 to 9 units	2,477 (10.81%)	85 (5.77%)	3 (0.2%)	10 (5.61%)	2,749 (7.8%)	174 (1.66%)
10 to 19 units	1,685 (7.35%)	13 (.88%)	15 (5.57%)	0 (0%)	1,750 (4.95%)	37 (0.35%)
20 or more	3,118	12	0	0	3,130	0*

[38] David J. DeWit, Clinical, Social and Evaluation Research Department, Addiction Research Foundation, 100 Collip Circle, Suite 200, London, Ontario N6G 4X8, Canada

[39] Crowley, Shelia. The Affordable Housing Crisis: Residential Mobility of Poor Families and School Mobility of Poor Children. The Journal of Negro Education. Volume 72(1): 22-38. Winter 2008. URL: http://www.jstor.org/stable/321128

[40] US Census (2000) accessed at: http://factfinder.census.gov/home/saff/main.html?_lang=en

units	(13.61%)	(.81%)	(0%)	(0%)	(8.88%)	(0%)
Mobile home	810 (3.53%)	79 (5.36%)	28 (10.4%)	2 (1.1%)	2,301 (6.53%)	1,382 (13.25%)
Boat, RV, van, etc.	0 (0%)	0 (0%)	4 (1.48%)	0 (0%)	17 (~0%)	13 (.12%)
Total units	**22,902**	**1,472**	**269**	**178**	**35,235**	**10,426**

Source: US Census (2000)

Table 3.5 shows that the majority (80.9%) of units available in the unincorporated County are 1-unit detached residences, or single-family homes. This percentage is significantly higher than the incorporated communities with Monroe having the next highest percentage of 1-unit detached units with 70.63%. The unincorporated County also has the highest percentage of mobile homes (13.25%) suggesting a possible need for more affordable housing options.

Analysis of Policy Options

Assumptions:

- Dependent ADUs are most likely to house persons with medical needs who receive care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other Considerations:

- Because ADU permits are requested on a case-by-case basis, it can be assumed that those households requesting permits have a specific need for the unit.
- Households requesting an ADU likely are because other units suitable to the size and need of that family are not available in the current housing stock, or constructing an additional unit is more cost effective.
- The County's average household size of 2.43 is possibly too large to accommodate a household in an ADU, especially a dependent one, comfortably and safely.
- However, the small proportion of smaller, multi-family units suggests a potential need for a more diverse housing stock and smaller accessory dwelling units.

Policy Option One: No Policy Change

No measureable change to indicator or current health levels. **Impact on health: none (*).**

Policy Option Two: Restriction of Current Rules

No measureable change to indicator. However, the restriction of satellite bedrooms could potentially result in friends or family members being unable to live with others in the same residence. **Impact on health: low negative impact (-).**

Policy Option Three: Dependent Accessory Dwelling Unit
This option would allow for individuals and households to construct accessory units for their specific income needs, family sizes and circumstances. However, because dependent ADUs are less likely to be offered as rental units and are more likely to serve family needs, this option will not have a significant impact on expanding the affordable housing stock. The County's average household size of 2.43 is also not accommodated by smaller dependent ADUs. **Impact on health: moderate positive benefit (+).**

Policy Option Four: Independent Accessory Dwelling Unit
This option could provide 8 additional units per year suitable for individuals and larger families reflective of the higher average household size in rural Benton County. Because independent accessory dwelling units can likely be offered as rental units, this option would provide variety and expansion to the existing housing conditions. However, not all permitted ADUs will be offered as rentals. It is possible that some are still built for the purpose of family living and care-taking. Because of their larger size and independence from the household living in the main dwelling, they are more suitable as rental units compared to dependent ADUs. Policy option four would have the greatest effect on the indicator by adding a projected 8 independent ADUs annually to the housing stock. **Impact on health: moderate positive benefit (++).**

Policy Option Five: Independent Accessory Dwelling Unit in UGB/RUC Zones
Similarly to option four, option five would provide opportunities for tailored units appropriate to the needs and incomes of rural households. Because of this option's limitations to areas within UGB, a projected 3 permit request will be made annually compared to 8 under policies three and four. This option could potentially provide more affordable housing and greater options but not to the extent of policy option four. **Impact on health: low positive benefit (+).**

HO.3: Proportion of households living below the poverty line

Health Based Rationale

High proportions of households living below the poverty line indicate a need for more affordable units and an increased variety of housing types. High housing costs have adverse effects on several areas of individual health. Spending a large proportion of income on housing reduces income available for other necessities such as food, health care, childcare, heating and utility services, and transportation.[41]

[41] San Francisco Department of Public Health, Program on Health, Equity, and Sustainability. The Case for Housing Impacts Assessment: The human health and social impacts of inadequate housing and their consideration in CEQA policy and practice. May, 2004. Available at: http://dphwww.sfdph.org/phes/publications/PHES_publications.htm

Households paying a significant amount of the total family income on housing are likely to accept substandard housing, live in overcrowded units, move frequently or become homeless. Substandard and overcrowded conditions increase the risk of exposure to sewage and hazardous material, inadequate heating, unsafe wiring, pests, mold and physical hazards. Tuberculosis and cardiovascular disease has also been linked with over crowded living conditions.[42] [43] Lower income households struggling to pay rent are also likely to relocate frequently to find more affordable housing in other communities. Frequent relocation increases the stress of school transitions, finding new jobs, and reestablishing social networks.[44] The inability to pay rent and keep tenancy can also cause anxiety and depression. Children who are relocated frequently experience behavioral problems, school delay, higher rates of adult-aged smoking, and higher depression and suicide rates.[45] [46] [47]

Existing Conditions

Percentage Below the Poverty Line:

Table 3.6-Percentage of Families and Individuals Living Below the Poverty Line

	Corvallis	Philomath	Monroe	Adair Village	Benton County	Unincorporated County
Families	975 (9.7%)	68 (6.5%)	20 (12.3%)	9 (6.4%)	1,252 (6.8%)	N/A
Individuals	9,166 (20.6%)	328 (8.2%)	79 (12.6%)	49 (9.0%)	10,665 (14.6%)	N/A

Source: US Census (2000)

In Benton County 6.8% of families and 14.6% of individuals are living below the poverty line. In Oregon, 7.9% of families and 11.6% of individuals live below the poverty line. Nationally 9.2% of families and 12.4% of individuals are living below the poverty line. The higher percentage of individuals in Benton County may be contributed to the large student population in Corvallis because of Oregon State University as seen in Corvallis' individual percentage of 20.6%.

Food Insecurity Rates:

[42] Stein L. A study of respiratory tuberculosis in relation to housing conditions in Edinburgh; the pre-war period. Br J Soc Med. 1950;4:143-169.
[43] Graham NM. The epidemiology of acute respiratory infections in children and adults: a global perspective. Epidemiol Rev. 1990;12:149-178.
[44] Guzman C, Bhatia R, Durazo C. Anticipated Effects of Residential Displacement on Health: Results from Qualitative Research. San Francisco Department of Public Health, 2005. Available at: http://dphwww.sfdph.org/phes/publications/PHES_publications.htm
[45] Dong M, Anda RF, Felitti VJ, et al. 2005. Childhood residential mobility and multiple health risks during adolescence and adulthood. Arch Pediatr Adolesc Med 159:1104-1110.
[46] Gilman SE, Kawachi I, Fitzmaurice GM, Buka SL. 2003. Socio-economic status, family disruption and residential stability in childhood: relation to onset, recurrence and remission of major depression. Psychological Medicine 33:1341-1355.
[47] Cooper M. 2001. Housing affordability: A children' issue. Discussion Paper No. F-11. Canadian Policy Research Networks, Inc. Available at: http://www.cprn.com/en/doc.cfm?doc=176.

In 2000, an estimated 14% of County residents were food insecure, compared to 12.6 percent statewide. In the same year, 5.6% of individual were food insecure with hunger compared to 4.9% in the state.[48] These figures show a problem of individuals affording basic food and healthy food options on a regular and reliable basis.

Number of Students Eligible for Free/Reduced School Lunches:
The number of students eligible for free or reduced school lunches is another indicator used to measure the prevalence of child poverty in a community. As presented in the table below from the Benton County Health Status Report, over 29% of students are eligible for free or reduced lunches with almost half of students in the Monroe School District qualifying for lunches

Free and Reduced Lunch by School District, Benton County, 2007-2008					
School District	Eligible for Free Lunch	Eligible for Reduced Lunch	Percent	Student Enrollment	Total Eligible
Benton	2,095	544	29.1%	9,064	2,639
Alsea SD 7J	36	n/a	n/a	141	n/a
Corvallis SD 509J	1,572	352	28.5%	6,748	1,924
Monroe SD 1J	152	65	48.4%	448	217
Philomath SD 17J	335	127	26.8%	1,727	462

Table 3.7 (Source: Benton County Health Status Report, 2010)

Analysis of Policy Options

Assumptions:

- The existing conditions show that a noticeable percentage of households and individuals live below the poverty line.
- The large enrollment of free and reduced lunch programs in local schools indicates relief from housing costs for some families to purchase basic goods.
- Lower income families benefit from greater availability of affordable housing units.
- ADUs provide a potential affordable housing option.
- ADUs, when traded in exchange for services (i.e. medical care giving, property maintenance, child care, etc) can generate jobs in rural areas.
- Exchanging rent for services makes those services more affordable for the homeowner and generates work and housing opportunities for the employer.
- Dependent ADUs are most likely to house persons with medical needs who receive care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals.

[48] Rural Communities Explorer. Oregon State University Rural Studies Program. Accessed at http://oregonexplorer.info/rural/ (2010)

Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Policy Option One: No Policy Change
No measureable effect on indicator or current health levels. **Impact on health: none (*)**

Policy Option Two: Restriction of Current Rules
No measurable effect on indicator. However, as mentioned in the previous indicator, restriction on satellite bedrooms could result in low-income friends or family members being unable to live with others in the same residence. **Impact on health: low negative impact (-).**

Policy Option Three: Dependent Accessory Dwelling Unit
Policy option three would have a positive impact on the indicator. Households below the poverty line would have more affordable housing opportunities. Employees hired in exchange for boarding would also benefit from housing opportunities and potentially receive income from the services they provide the homeowner. This option would generate approximately 8 ADUs annually, potentially meaning 8 arrangements that benefit both the tenant of the ADU and the property owner. Eight units represent less than 1% of the total housing stock, which would have a small impact. **Impact on health: low positive benefit (+).**

Policy Option Four: Independent Accessory Dwelling Unit
The positive impacts of this policy are similar to policy option three. The units would provide an affordable housing option to lower income families while generating opportunities for employment through exchanging of services. This option would potentially have a greater positive impact than option three because independent ADUs can be larger and more likely to house a larger household rather than individuals. Current homeowners would likely not benefit from this being an "affordable" option because of the high up front development costs and fees. **Impact on health: moderate positive benefit (++).**

Policy Option Five: Independent Accessory Dwelling Unit in UGB Zones
This option would have positive impact on health but the impact would be smaller than options three and four. Instead of providing a projected 8 ADUs for low-income families or persons needing work, this option would generate an estimated 3 ADUs. The option could potentially generate a significant number of units, but based on projection data from literature the figure is more appropriately 3-4 units. **Impact on health: low positive benefit (+).**

HO.4: Proportion of households living in overcrowded and substandard conditions

Health Based Rationale

Overcrowding and substandard housing have a direct relationship to poor mental health, developmental delay, heart disease, and other chronic medical conditions.[49] Overcrowding is defined as more than one person per room in an individual dwelling unit.[50] A "room" includes bedrooms, living rooms and kitchens but excludes bathrooms. Too many residents in a single residence create a lack of attachment to home, increased noise, sleep deprivation, increased conflicts causing anxiety, anger, and depression.[51] These housing arrangements also decrease one's ability to concentrate, creating barriers to educational success for school-aged children. Children sharing bedrooms and living in homes with limited floor space are also at a higher risk to be held back a year in school and fail to complete high school.[52]

Substandard housing is also a contributor to several serious health conditions. The US Department of Housing and Urban Development defines substandard housing as[53]:

- being dilapidated;
- not having operable indoor plumbing;
- without a flushable toilet, bathtub or shower inside the unit for the exclusive use of the family;
- does not have electricity or has inadequate or unsafe electrical service;
- does not have safe or adequate source of heat;
- should, but does not, have a kitchen;
- or, has been declared unfit for the habitation by an agency or unit of government.

Housing with these characteristics, like overcrowding, have serious consequences to overall health and childhood development. Water leaks from inadequate plumbing and poor air quality from lack of ventilation cause mold, mites, and pest infestation leading to increased risk of respiratory illness and asthma.[54] Extreme indoor temperatures from poor heating and insulation have been associated with increased mortality, especially among elderly and seriously ill populations.

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[49] Bashir, Samiya. Home is Where the Harm Is: Inadequate Housing as a Public Health Crisis. The American Journal of Public Health. May 2002. 92(5): 733-738. http://ajph.aphapublications.org/cgi/content/full/92/5/733#R3

[50] Measuring Overcrowding in Housing. U.S. Department of Housing and Urban Development Office of Policy Development and Research. Prepared by Econometrica, Inc. September 2007 http://www.huduser.org/publications/pdf/Measuring_Overcrowding_in_Hsg.pdf

[51] Knotsch, Cathleen. Housing As a Determinant of Health. National Aboriginal Health Organization. November 2008. http://www.naho.ca/inuit/e/healthfactors/documents/2009FinalAnnotatedBibliography.pdf

[52] Housing and Education. Habitat for Humanity. http://www.habitat.org.au/Document.Doc?id=300

[53] HUD's Definition of Substandard Housing. Laurel Hill Center. 2007 http://www.laurel.org/huddefinition.htm

[54] Where We Live Matters For Our Health: The Links Between Housing and Health. Robert Wood Foundation Commission to Build a Healthier America. September 2008. http://www.rwjf.org/files/research/commissionhousing102008.pdf

Existing Conditions

Units Lacking Basic Characteristics:
A measurement of substandard conditions is the number of units lacking basic facilities such as plumbing, kitchen facilities and telephone service. The US Census collects information on units lacking these basic characteristics. As evident in the table below, lack of these characteristics is not significant in Benton County. The most lacking characteristics are telephone services with 5.0% of the County's total units followed by complete kitchen facilities at 2.4%.

Table 3.8-Benton County Housing Units Lacking Basic Characteristics

	Corvallis	Philomath	Monroe	Adair Village	Benton County (Total)	Unincorporated County
Lack complete plumbing facilities	69 (0.4%)	0 (0%)	0 (0%)	0 (0%)	298 (0.9%)	N/A
Lack complete kitchen facilities	258 (1.3%)	7 (.5%)	0 (0%)	2 (1.2%)	797 (2.4%)	N/A
No telephone service available	177 (0.9%)	0 (0%)	18 (7.8%)	0 (0%)	1,656 (5.0%)	N/A

(Source: US Census, 2000)

Number of Persons Per Room:
One measure of overcrowding is the number of persons per room in an individual dwelling unit. A unit is considered to be overcrowded is there is more than one occupant per room, not including bathrooms and kitchens. According to US Census data, only 1.3% of units have more than one person per room compared to 2.5% of units in the state.

Analysis of Policy Options

Assumptions:

- Although small, a proportion of households in Benton County live in units without basic characteristics.
- Overcrowded and substandard conditions exist because of a lack of affordable housing and high expenses associated with unit upkeep.
- Multiple families may live together because one or both cannot afford a separate unit. However, some individuals and families living in overcrowded conditions prefer to live together to maintain a family unit and social connections.
- Families and individuals living in overcrowded conditions would live in less crowded settings if affordable and appropriate units were available.

- Dependent ADUs are most likely to house persons with medical needs who receive care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other Considerations
During the focus groups, residents discussed the substandard conditions of many rental properties in rural Benton County including the prevalence of mold and pests. Residents complained about mold and mildew in their units that caused respiratory problems and increase the symptoms of allergies and asthma.

Policy Option One: No Policy Change
No measureable impact on indicator or current health levels. **Impact on health: none (*).**

Policy Option Two: Restriction of Current Rules
This option could potentially increase the number of units in substandard conditions. Currently, medical hardship trailers and "satellite bedroom", or accessory bedrooms, are permitted through the County are inspected for compliance with health and safety codes. If these permitted uses are no longer allowed (accessory bedrooms) some households may construct these units illegally and would not be inspected and certified compliant with County codes. This option would have the greatest negative effect on health related to substandard and overcrowded housing conditions. **Impact on health: low negative impact (-).**

Policy Option Three: Dependent Accessory Dwelling Unit
This option would improve health by reducing the number of overcrowded and substandard housing units by providing more affordable housing options and variety to the existing housing stock. Because these units are dependent on the primary dwelling this option would most benefit those individuals who are living with friends or family members in the primary dwelling because of an inability to afford a separate residence or a specific need to reside with family members. Also, ADUs under this option would have to be permitted and County staff would inspect the units for electricity and complete plumbing facilities, heating and ventilation and sound structural construction. As projected in previous indicators, this option would provide an estimated 8 ADUs annually. **Impact on health: moderate positive benefit (++).**

Policy Option Four: Independent Accessory Dwelling Unit
This option would improve health by reducing the number of overcrowded and substandard housing units by providing more affordable housing options and variety to the existing housing stock. Because independent dwelling units could support more than one individual and potentially entire families, this option would reduce overcrowded

conditions caused by more than one family residing in a single unit. This option would also provide additional living spaces for friends and family members who wish to live with the residents of the primary dwelling but don't want to live in an overcrowded setting. Like policy option three, independent ADUs would be subject to inspection by county staff to ensure basic facilities and compliance with county building and safety codes. **Impact on health: moderate positive benefit (++).**

Policy Option Five: Independent Accessory Dwelling Unit in UGB/RUC Zones
This option would reduce the number of overcrowded and substandard housing units but not the extent as policy options three and four because of the restricted areas of ADU development. This option would generate a projected 3 units annually. **Impact on health: low positive benefit (+)**

CONCLUSIONS AND HEALTH PROMOTING MITIGATIONS

As assessed by the indicators above, several considerations cause accessory dwelling units to have low to moderate impacts on healthy housing. The first consideration, the high costs of development and permitting, excludes many-cost burdened homeowners from constructing and renting ADUs for additional income assistance. The small size of ADUs makes them less suitable as rentals for lower income renting families compared to multifamily housing complexes. The public at community meetings discussed the lack of affordable housing, but did not consider ADUs a suitable alternative and many mentioned a concern over neighbors potentially renting their ADUs to college students or multiple individuals. The units, especially the larger independent ADUs, may improve health if rented, but county staff and most stakeholders do not want ADUs used for rental purposes. For these reasons, ADUs are not a viable solution to affordable housing shortages.

Potential mitigations for improving health relating to healthy housing issues are:

- Promote/facilitate/implement affordable housing programs;
- Enforce current health and building code standards to minimize overcrowded and substandard housing units;
- Rezone more land residential to promote housing development and zone more land for medium density development to encourage multi-family projects.

CHAPTER FOUR: ACCESS TO GOODS AND SERVICES

ACCESS TO GOODS AND SERVICES INDICATORS

Access to goods and services was identified in the preliminary literature review as an area of impact on health. Indicators were selected from the San Francisco HDMT to assess the effects of each policy option on health. The indicators from the HDMT were developed for use in an urban setting. Some of the recommended distances to goods and services have been modified to be more representative of the rural conditions in Benton County. GIS information was used to determine the location of amenities and the number of units within close proximity to each set of services. There are six indicators assessing the ADU health impacts related to access:

- AGS.1: Proportion of households within ½ mile of a public school;
- AGS.2: Proportion of population within ½ mile of a public park or recreational facility;
- AGS.3: Accessibility of full-service grocery store/supermarket;
- AGS.4: Average distance to the nearest hospital, urgent care clinic, or other medical facility;
- AGS.5: Accessibility to Senior Centers.

Summary of Chapter Impacts:

- Allowing accessory dwelling units in Benton County would negatively impact the indicators of health related to accessibility of basic goods and services.
- Policy Option Two would have the greatest positive impact on health.
- Policy Option Five would have the greatest negative impact on health.

AGS.1: Proportion of households within ½ mile of a public school

Health Based Rationale

If a child lives far from their school they are less likely to walk to school and are more likely to be taken in an automobile.[55] Children attempting to walk long distances, which include children of lower income families without access to a car, are exposed to the risks of dangerous traffic and outdoor hazards. These become barriers to walking to school, which reduces the opportunity for children to receive their recommended daily physical

[55] Dellinger A, Staybtib C. Barriers to Children Walking and Bicycling to School. Morbidity and Mortality Weekly Report. 2002;51:701-704.

activity.[56] Physical activity decreases the likelihood of childhood obesity, diabetes, respiratory illnesses and increases physical development and health.

Research also shows that air pollution around schools is especially high because of parents driving children and idling cars when picking and dropping of students. When households are located within walking distance to schools, fewer children would need to be driven to school and vehicle pollution levels would decrease. Air pollution contributes to respiratory illnesses including heart disease, high blood pressure, asthma and bronchitis.[57] [58]

Child Care. Schools, and some community centers, provide daycare services and afterschool activities for students. Access to childcare has several positive benefits for children and their families. High quality childcare affects physical development and health, behavioral growth, cognitive skills, and social skills contribute to academic success.[59] [60] Long-term research suggests that children who attend early childhood education are more likely to graduate from high school and maintain employment compared to those who did not.[61] The quality of care provided also has impacts on childhood health and development. Studies show that children who received higher quality care had better language skills, cognitive development and where more cooperative than those children who received lower quality care.[62] Research also suggests that daycare and early childhood education may play roles in the early detection of learning disabilities and developmental disorders such as autism.[63]

Childcare also provides parents with a greater ability to work full time and reduces the stress associated with caring for children during work hours.[64] Having one or both parents in the workforce increases income for other basic needs and services essential to total family health levels.

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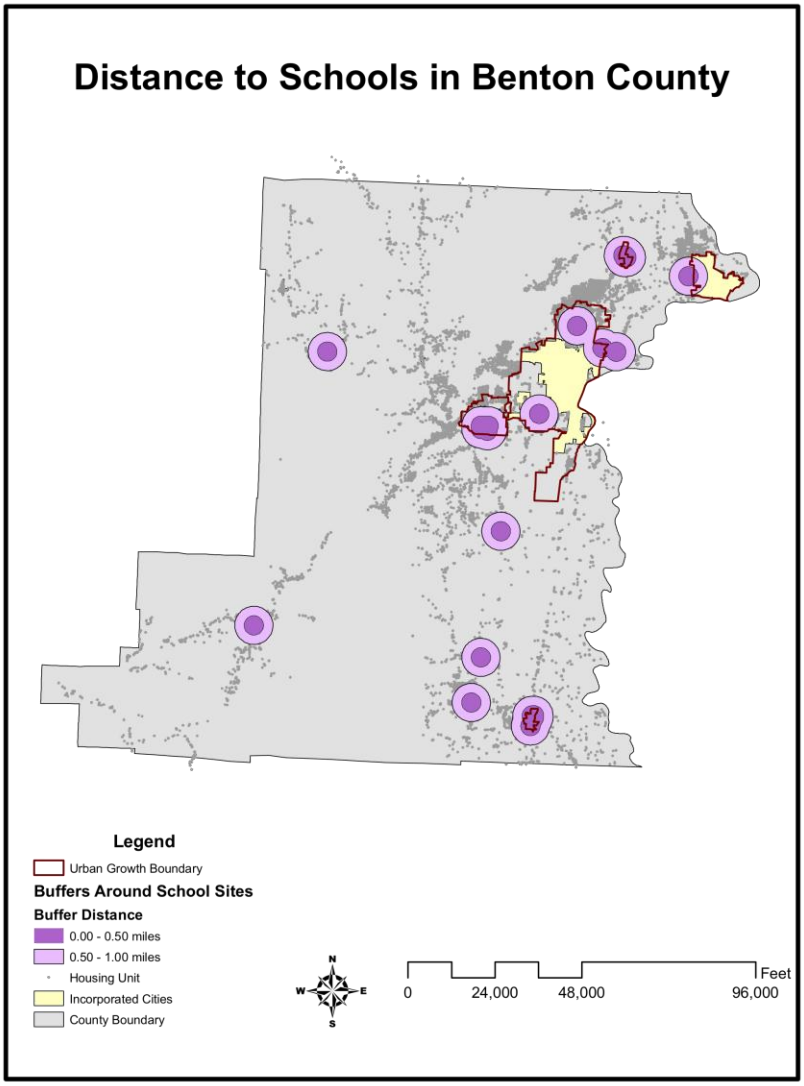
[56] Ewing R, Schroeer W, Greene W. 2004. School location and student travel: Analysis of factors affecting mode choice. Transportation Research Record: Journal of the Transportation Research Board 1895:55-63.
[57] Kim JJ, Smorodinsky S, Lipsett M, Singer BC, Hodgson AT, Ostro B. Traffic-related air pollution and respiratory health: East Bay Children's Respiratory Health Study. American Journal of Respiratory and Critical Care Medicine. 2004;170: 520-526.
[58] Simkhovich BZ, Kleinman MT, Kloner RA. Air Pollution and Cardiovascular Injury: Epidemiology, Toxicology, and Mechanisms. J Am Coll Cardiol. 2008;52(9):719-26.
[59] Karoly LA. Early Childhood Interventions: Proven Results, Future Promise. RAND Corporation, 2005.
[60] Schweinhart LJ. The High / Scope Perry Preschool Study Through Age 40. The High Scope Press, 2004.
[61] Schweinhart L, Montie J. 2004. The High/Scope Perry Preschool Study to Age 40. High/Scope Educational Research Foundation. Presentation to the World Bank, November 17, 2004. High/Scope Educational Research Foundation. Accessed on May 14. 2008: http://www.highscope.org/Content.asp?ContentId=219
[62] USDHHS. National Institute for Child Health and Human Development. The NICHD Study of Early Child Care and Youth Development (SECCYD): Findings for Children up to Age 4 1/2 Years (October 2006). Available at: http://www.nichd.nih.gov/publications/pubs/upload/seccyd_051206.p
[63] Branson, Diane. 26 March 2008. Community Childcare Providers' Role in the Early Detection of Autism Spectrum Disorders. Early Childhood Education Journal. Volume 35(6): 523-530.
[64] Terry-Azios, D. (2000). Easing Childcare Woes. Hispanic, 13(12), 48. Retrieved from Academic Search Premier database.

Existing Conditions[65]

- 11.46% of residential units in the unincorporated County (1,176 units) are located within a ½ mile radius of a public school.
- 40.22% of residential units in the unincorporated County (4,127 units) are located within a 1-mile radius of a public school.
- 80.56% of residential units in UGB/RUC zones are within a 1-mile radius of a public school (2,836 units).
- 56.1% of residential units in UGB/RUC zones are within a 1-mile radius of a public school (1,977 units).
- The community of Alpine does not have a school, but the Alpine Community Center (not shown on map) provides activities for youth and childcare.

[65] Benton County GIS



Assumptions:

- Residents of ADUs tend to be "baby boomers", the elderly, those with an illness or disability. ADUs in rural Benton County will likely not house a significant population of school-aged children.
- Independent ADUs per policy option four will be the most likely type of ADU to provide housing to school-aged children.
- The lack of pedestrian and bicycle infrastructure in the unincorporated County makes walking to school difficult and unsafe for most children.
- If a child's home is located within walking distance to a public school with access to safe sidewalks and bike lanes, the child would be more likely to chose to walk or bike to school.

- Dependent ADUs are most likely to house persons with medical needs receiving care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other Considerations:

- Participants of the focus groups discussed the lack of safe pedestrian and bicycle routes in rural communities. Students in rural Benton County have more barriers to walking to school compared to students in more urbanized areas of the County.
- Residents at the Alsea community meeting were concern that the elementary school in Alsea may close because of decreasing student enrollment. Allowing ADUs would encourage relocation to the community and retain existing residents, thereby supporting student enrollment at the school.
- Community meeting participants, especially those in Alsea, discussed the difficulty of leaving the town during certain seasons because of weather and road conditions. They generally agreed in the lack of access to other parts of the County where goods and services are located.

Policy Option One: No Policy Change

No measureable impact on indicator or current health levels. **Impact on health: none (*).**

Policy Option Two: Restriction of Current Rules

Policy option two would have a very small positive impact on health by potentially reducing the number of residences in rural areas far from school sites. This option would not allow satellite bedroom and accessory units, which would limit the living capacity of those housing units. However, the positive impact would be small and immeasurable because the number of individuals living in these restricted rooms and units is not known and the reduction in future population levels cannot be predicted. **Impact on health: small positive benefit (+).**

Policy Option Three: Dependent Accessory Dwelling Unit

This option would have a negative effect on the proportion of households within walking distance to a public school. Properties in rural areas far from schools could be permitted to construct a dependent accessory dwelling unit. However, considering the assumption that children are unlikely residents of ADUs the negative effects of this option are minimal and insignificant. **Impact on health: moderate negative impact (--).**

Policy Option Four: Independent Accessory Dwelling Unit

This option has the greatest potential of placing school-aged children in locations far from public schools because independent ADUs are the most likely ADUs type to house

families with children. This option would have a negative effect on the proportion of households within walking distance to school. **Impact on health: high negative impact (---).**

Policy Option Five: Independent Accessory Dwelling Unit in UGB Zones
This option would have a negative impact on the proportion of households within walking distance to schools but the impact would be smaller compared to policy option four. Schools are located within UGB zones, therefore those dwellings located within the boundaries are much closer to school sites than those in the more rural parts of the County. Focus group participants in Alsea discussed the lack of safe sidewalks bike routes for children to walk to and from school so its possible that even those students living within walking distance will be driven to school. While the projected increase in population generated from ADUs annually is very small, the comments from community members regarding the difficulty in accessing goods and services makes this option a considerable impact. **Impact on health: moderate negative impact (--).**

AGS.2: Proportion of population within 1/2 mile of a public park or recreational facility

Health Based Rationale

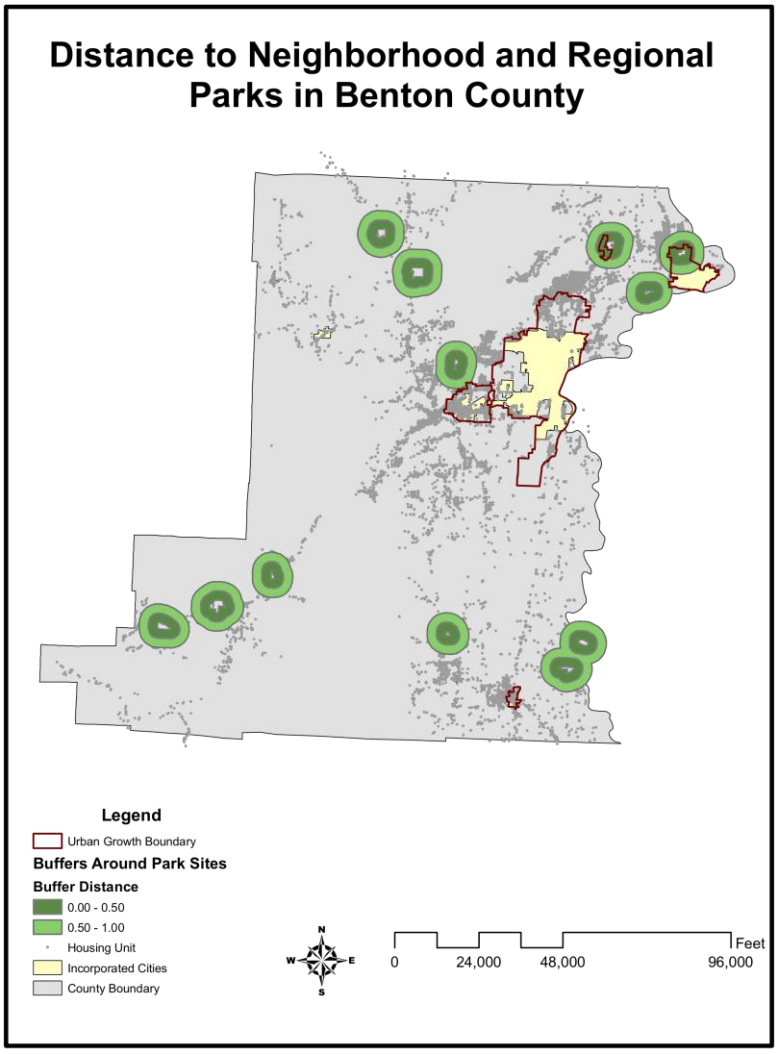
The proximity of a child's residence to a park is related to the amount of daily physical activity that child receives.[66] Regular physical activity increases academic performance,[67] reduces the likelihood of obesity, and improves overall health and development. Research also suggests that exposure to natural environments improves cognitive functioning in children with developmental disabilities such as Attention Deficit and Hyperactivity Disorder (ADHD). The accessibility of recreational and fitness facilities has also been shown to improve the physical fitness levels of women by reducing their BMI.[68] Recreational facilities also provide places for communities members to interact and promote social cohesion.[69]

Existing Conditions

- 5.5% of residential units (567 units) in the unincorporated County are located within a ½ mile radius of a public park or recreational facility.
- 11.27% of residential units (1,157 units) in the unincorporated County are located within a 1-mile radius of a public park or recreational facility.
- 916.7% of residential units (545 units) in UGB zones are within a 1-mile radius of a public park or recreational facility.

[66] Bauman A, Bull F. Environmental Correlates of Physical Activity and Walking in Adults and Children: A Review of Reviews. London: National Institute of Health and Clinical Excellence; 2007.
[67] Nelson MC, Gordon-Larsen P. Physical activity and sedentary behavior patterns are associated with selected adolescent health risk behaviors. Pediatrics. 2006;117:1281-1290.
[68] Mobley LR, Root ED, Finkelstein EA, et al. Environment, obesity, and cardiovascular disease risk in low-income women. Am J Prev Med. 2006;30(4):327-332.
[69] San Francisco Public Health Department. Health Development Measurement Tool. 2010. Accessed at http://www.thehdmt.org

- 10.8% of residential units (352 units) in UGB zones are within a 1-mile radius of a public park or recreational facility.



Assumptions:

- One of the health-based rationales of the indicator is that parks and green spaces improve the mental health of adults and children. Because of the rural nature of Benton County and the large protected open spaces, it can be assumed that residents do not need access to parks to receive exposure to natural settings.
- The elderly and physically disabled individuals are less likely to use parks and large open spaces compared to younger and able-bodied individuals, regardless of their proximity.
- School sites can also serve as park spaces were recreational equipment or sports fields are available for public use after school hours. (Refer to the previous indicator for the locations of school sites in the unincorporated County.)

- School sites that are open to the public after school hours also serve as recreational facilities.
- Dependent ADUs are most likely to house persons with medical needs receiving care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other Considerations:
Community meeting participants, especially those in Alsea, discussed the difficulty of leaving the town during certain seasons because of weather and road conditions. They generally agreed in the lack of access to other parts of the County where goods and services are located.

Policy Option One: No Policy Change
No measureable impact on indicator or current health levels. Impact on health: none (*).

Policy Option Two: Restriction of Current Rules
Policy option two would have a very small positive impact on health by potentially reducing the number of residences in rural areas far from parks and recreational facilities. This option would not allow satellite bedroom and accessory units, which would limit the living capacity of those housing units. However, the positive impact would be small and immeasurable because the number of individuals living in these restricted rooms and units is not known and the reduction in future population levels cannot be predicted. **Impact on health: small positive benefit (+).**

Policy Option Three: Dependent Accessory Dwelling Unit
This option would have a negative impact on the proportion of households within walking distance to parks and recreational facilities. However, because the residents of dependent accessory dwelling units are most likely not school-aged children the impact would be minimal and relatively insignificant. Dependent accessory dwelling unit residents are usually the elderly, those with illnesses or those with a disability. These populations are less likely to require the daily use of recreational facilities compared to other populations because of physical and mobility barriers. **Impact on health: moderate negative impact (--).**

Policy Option Four: Independent Accessory Dwelling Unit
This option would have a similar negative impact on the proportion of households within walking distance to parks and recreational facilities as policy option three. Independent ADUs are more suitable for families with small children compared to Dependent ADUs, therefore this option would have a greater negative impact on health. More children and adults would be located farther from parks and recreational facilities under this option

than any other policy option. While the projected increase in population generated from ADUs annually is very small, the comments from community members regarding the difficulty in accessing goods and services makes this option a considerable impact. **Impact on health: high negative impact (---).**

Policy Option Five: Independent Accessory Dwelling Unit in UGB/RUC Zones
This option would have a similar negative effect on the health indicator as policy option four. Unlike other amenities such as school, markets and health services, many County parks and recreational areas are not located within UGB and RUC zones. The spatial limitation of ADU development in this option does not have a minimizing effect on health impacts as apparent in other indicators. **Impact on health: moderate negative impact (--).**

AGS.3: Accessibility of full-service grocery store/supermarket

Health Based Rationale

The food options available in a community greatly influences the diet and overall health of community members. In many rural areas, households must travel long distances to access grocery stores. Grocery stores struggle to remain open in rural areas because of a smaller customer base and increased costs of receiving goods. Rural stores may also not carry many basic necessities including fresh produce and meat and the overall price of food are much higher than in more urban areas. Research suggests that lower income families are more likely to experience greater inaccessibility to markets because they lack a private automobile.[70]

Having to travel long distances for healthy and affordable food options increases the cost associated with healthy eating. Healthy eating habits reduce the risk of obesity, lowers body mass index (MBI) and improve the overall quality of individual health. Evidence suggests that having a supermarket in a neighborhood increases the fruit and vegetable consumption for individuals in that neighborhood.[71] [72] Close stores within walking distance also provide opportunities for people to receive daily physical activity by walking to the store instead of driving in an automobile. Research shows that increasing the distance one has to travel to a supermarket increases body mass index (BMI).[73]

Existing Conditions[74]

[70] Report explores effect of food deserts. July 13, 2009 v39 i14 p4(2)*Nutrition Week*, 39, 14. p.4(2). Retrieved May 07, 2010, from Academic OneFile via Gale: http://find.galegroup.com.proxy.library.oregonstate.edu/gtx/start.do?prodId=AONE&userGroupName=s8405248

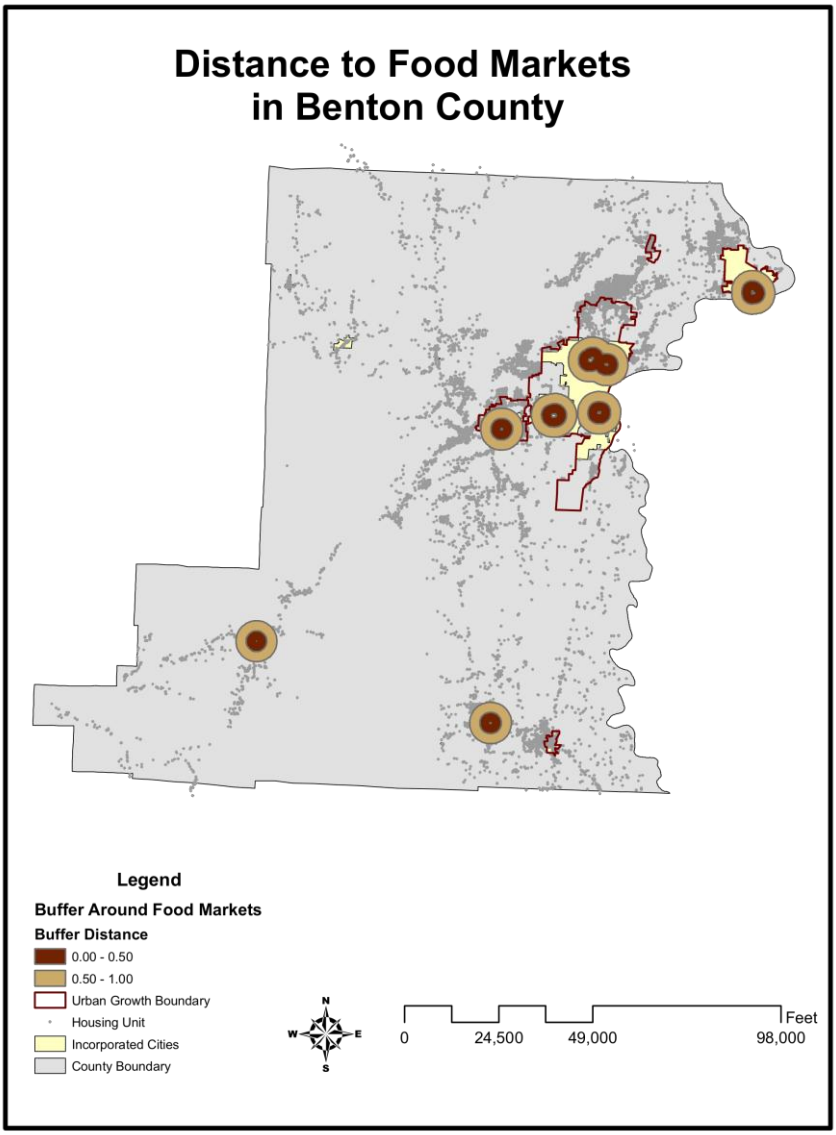
[71] Morland K, Diez Roux AV, Wing S. Supermarkets, other food stores, and obesity: the atherosclerosis risk in communities study. Am J Prev Med. 2006;30(4):333-9.

[72] Inagami S, Cohen DA, Finch BK, Asch SM. You are where you shop: grocery store locations, weight, and neighborhoods. Am J Prev Med. 2006;31(1):10-7.

[73] Drewnowski A, Darmon N, Briend A. 2004. Replacing fats and sweets with vegetables and fruits – a question of cost. American Journal of Public Health 94(9):1555-1559.

[74] Benton County GIS Data

- 9.6% of residential units in the unincorporated County (991 units) are located within a ½ mile radius of a market.
- 21.3% of residential units in the unincorporated County (2,188 units) are located within a 1-mile radius of a market.
- 22.6% of residential units in UGB zones are within a ½ mile radius of a market (799 units).
- 52.7% of residential units in UGB zones are within a 1-mile radius of a market (1,855 units).
- Note: not all food markets in the incorporated communities are included in these percentages or on the map below. Only food markets in incorporated cities near the city boundaries were included that may include rural residences within the market's one-mile radius.



Prevalence of Retail Food Stores:

In 2005, the prevalence of retail food stores per 1,000 residents was 0.37, compared to .55 statewide.[75] This figure shows a shortage of retail food markets in Benton County.

Assumptions:

- The cost of fuel in rural areas is more expensive than urban areas.
- Food and basic goods are more expensive in rural areas than in urban areas.

[75] Rural Communities Explorer. Oregon State University Rural Studies Program. Accessed at http://oregonexplorer.info/rural/ (2010)

- The variety and quality of produce and meat in isolated rural areas is poorer compared to urban areas that have greater access to shipping and distribution routes.
- Individuals living in ADUs could have increased access to food markets because of the transportation support provided by a relative or caregiver living on the same property. Relatives or caregivers could also shop for the individual, reducing the need for access to food markets.
- Dependent ADUs are most likely to house persons with medical needs receiving care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other considerations:

- More food markets would locate to rural areas if there were a larger population to support a customer base. Existing markets would also be able to provide more and better goods with a larger customer base. Allowing ADUs in rural areas could provide an increase in population to provide patronage to rural food markets.
- Community meeting participants, especially those in Alsea, discussed the difficulty of leaving the town during certain seasons because of weather and road conditions. They generally agreed in the lack of access to other parts of the County where goods and services are located.

Policy Option One: No Policy Change

No measureable impact on indicator or current health levels. **Impact on health: none (*).**

Policy Option Two: Restriction of Current Rules

Policy option two would have a very small positive impact on health by potentially reducing the number of residences in rural areas far from food markets. This option would not allow satellite bedroom and accessory units, which would limit the living capacity of those housing units. However, the positive impact would be small and immeasurable because the number of individuals living in these restricted rooms and units is not known and the reduction in future population levels cannot be predicted. **Impact on health: small positive benefit (+).**

Policy Option Three: Dependent Accessory Dwelling Unit

This option would allow the development of ADUs outside of a close distance from food markets creating a negative impact on the health indicator. Only 21.3% of housing units are located within a one-mile radius of a food markets and only 9.6% are located within a half-mile radius. The majority of units, and future ADUs, have poor access to healthy food options. Residents of dependent ADUs that are reliant upon family members or

caretakers are less affected as they would have assistance in accessing groceries. **Impact on health: moderate negative impact (--).**

Policy Option Four: Independent Accessory Dwelling Unit
Like option three, this option would allow the development of ADUs outside of a close distance from food markets creating a negative impact on the health indicator. This option's impact would be greater than option three as residents of independent ADUs would include more independent individuals, and potentially more households within more than one person. While the projected increase in population generated from ADUs annually is very small, the comments from community members regarding the difficulty in accessing goods and services makes this option a considerable impact. **Impact on health: high negative impact (---).**

Policy Option Five: Independent Accessory Dwelling Units in UGB Zones
This option would have a moderate negative effect on the indicator. Twenty-two percent of units within UGB zones are within a .5-mile radius of a food market, compared to only 9.6 percent under options three and four. Fifty-two percent of households in UGB zones are within a 1-mile radius compared to only 21.3 in the total unincorporated county. This option would still allow the development of ADUs outside of a one-mile radius from markets but at a smaller scale compared to options three and four. **Impact on health: moderate negative impact (--).**

AGS.4: Proportion of households within ½ mile of a hospital, urgent care clinic, or other medical facility

Health Based Rationale

Access to health care services is directly related to the prevention of chronic illnesses, lower hospitalization rates and improved overall individual health.[76] The further the distance from one's home to a medical facility increases the difficulty and costs barriers of receiving care. The elderly, disabled, and lower income households that do not have access to an automobile must rely on public transportation or friends and family to visit a clinic. These burdens may result in disadvantaged populations not receiving regular and needed medical attention.

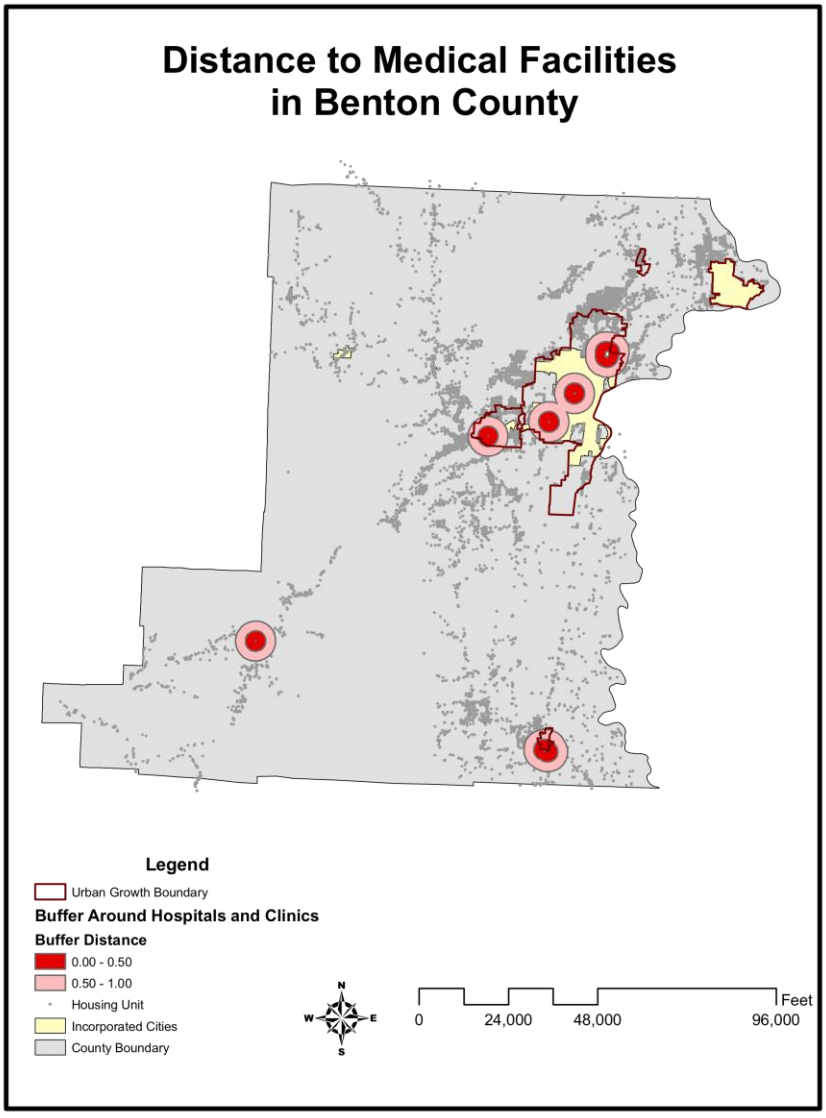
Living closer to hospital and urgent care facilities also decreases the time needed to receive emergency medical attention which reduces the risk of mortality associated with serious injuries and unexpected illnesses. Very rural areas also have longer first-responder response times that are associated with survival rates for serious medical emergencies.[77]

[76] Epstein AJ. The role of public clinics in preventable hospitalizations among vulnerable populations. Health Serv Res. 2001;36(2):405-20.
[77] Gonzales, RP. Improving Rural Emergency Medical Service Response Time With Global Positioning System Navigation. The Journal of Trauma. Nov; 67(5):899-902, 2009. Accessed at http://pudmed.gov.

Existing Conditions

Most medical facilities in Benton County are located within the City of Corvallis. Good Samaritan Hospital located in North Corvallis is the County's only hospital and primary emergency care facility for residents. Corvallis is also the location of the urgent care facilities, family doctors and specialized medical centers. There are few options to receive medical care or consultation in the rural unincorporated areas outside of Corvallis. These options include the Philomath Family Medicine Clinic, the Alsea Rural Health Care Facility, and the Monroe Community Health Center. The Alsea facility is operated by a private health provider and provides basic health services. The Monroe Community Health Clinic is operated by the Benton County Health Department and provides the same health services provided at the primary health clinic in Corvallis.

- 12.13% of residential units (1,245 units) in the unincorporated County are located within a ½ mile radius of a medical clinic or hospital.
- 22.27% of residential units (2,286 units) in the unincorporated County are located within a 1-mile radius of a medical clinic or hospital.
- 58.2% of residential units (1,891 units) in UGB zones are within a 1-mile radius of a medical clinic or hospital.
- 33.6% of residential units (1,093 units) in UGB zones are within a .5-mile radius of a medical clinic or hospital.



Assumptions:

- Elderly individuals, people with disabilities and those with an illness are likely residents of accessory dwelling units. These special needs populations require more medical care and attention compared to other populations.
- Should a person dwelling in an ADU require frequent visits to medical facilities, the friends or family members in the primary dwelling unit would likely assist with transportation to and from appointments.
- ADUs can be used for caregiver housing. Caregivers can provide elderly and ill individuals with increased access to medical clinics and hospitals.
- Patients are unlikely to walk or bike to medical facilities.

- Dependent ADUs are most likely to house persons with medical needs receiving care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other Considerations:
Community meeting participants, especially those in Alsea, discussed the difficulty of leaving the town during certain seasons because of weather and road conditions. They generally agreed in the lack of access to other parts of the County where goods and services are located.

Policy Option One: No Policy Change
No measureable impact on indicator or current health levels. **Impact on health: none (*).**

Policy Option Two: Restriction of Current Rules
Policy option two would have a very small positive impact on health by potentially reducing the number of residences in rural areas far from medical facilities. This option would not allow satellite bedroom and accessory units, which would limit the living capacity of those housing units. However, the positive impact would be small and immeasurable because the number of individuals living in these restricted rooms and units is not known and the reduction in future population levels cannot be predicted. **Impact on health: small positive benefit (+).**

Policy Option Three: Dependent Accessory Dwelling Unit
This option would have a negative effect on the indicator by increasing the proportion of units farther away from hospitals and clinics. Only 12.13% of housing units in the unincorporated areas are within a half-mile radius of a medical facility, and 22.27% are within a one-mile radius. Residents of dependent ADUs are also most likely to be baby boomers, the elderly, the disabled or individuals with an illness that require the most medical attention. Therefore, this option would have the greatest negative effect on the indicator compared to the other policy options. It should be considered that residents of ADUs could receive transportation assistance to medical facilities from the friends or family members residing in the other unit on the property. This consideration lowers the impact from being a high negative impact, to moderate. **Impact on health: moderate negative impact (--).**

Policy Option Four: Independent Accessory Dwelling Unit
Similarly to policy option three, under this option ADUs can be developed in locations far from hospitals and medical clinics. As independent ADUs would potentially house fewer ill, elderly, and disabled individuals than dependent ADUs, more of these independent ADU residents would need to access their own medical services. Policy

option four would have a negative impact on the health indicator by increasing the proportion of units in rural areas far from medical facilities. While the projected increase in population generated from ADUs annually is very small, the comments from community members regarding the difficulty in accessing goods and services makes this option a considerable impact. **Impact on health: high negative impact (---).**

Policy Option Five: Independent Accessory Dwelling Unit in UGB/RUC Zones
This option would also have a negative impact on health as assessed in option four. However, the number of housing units in UGB zones that are far from medical clinics and hospitals is fewer than the County as a whole. Thirty-three percent of households under this option eligible for an ADU permit are within a half-mile radius of a medical facility, and 58.2% of units are within a 1-mile radius. Because fewer units are far from facilities, the negative impact on health is smaller than options three and four. **Impact on health: moderate negative impact (--).**

AGS.5: Accessibility to Senior Centers

Health Based Rationale

Senior centers provide a range of services and activities targeted towards the health and well being of senior citizens. Interaction with other seniors through activities and socializing increases the happiness and quality of life for many seniors who are otherwise isolated in their living situations. Center staff members can also assist seniors with identifying potential medical concerns, accessing housing and transportation options, and identify possible elderly abuse or other serious health risks.[78]

Senior centers also provide affordable and healthy meals. For elderly individuals on fixed incomes these meals are important contributors to their healthy diets and eating habits. Wellness classes, counseling, and physical activities also support the mental and physical health of senior citizens. Senior center staff members recognize that wellness programs that keep senior active contribute to improved overall health, decreased risk of injury, increase mobility, and keeps seniors out of long term care facilities and in their own homes until later in life.[79]

Existing Conditions

The Corvallis Senior Center is the largest and primary senior center in Benton County with over 70,000 visits annually and an estimated 26,000 participants.[80] The Center is operated by the City of Corvallis Parks and Recreation Department and services both City and County residents 50 years of age and older. Activities include recreational activities, health and memory screenings, support groups, and a five-day-a-week meals program. The meals program also operates a meals route that delivers meals directly to residents homes in Benton County. The clinic in Alsea also operates a meals program for

[78] Corvallis Budget Committee Meeting. Public Comment from Senior Center Volunteer. May 10th, 2010
[79] Theresa Brand. Corvallis Senior Center Director. Phone Interview. June 1st 2010.
[80] Corvallis Budget Committee Meeting. Public Comment from Senior Center Volunteer. May 10th, 2010.

senior citizens in the western areas of Benton County. Senior Centers in Philomath and Albany also serve elderly individuals with programs similar to the Corvallis Senior Center. Both Alpine and Monroe have community centers that provide limited services to seniors.

Osborne Aquatic Center. The aquatic center located in Corvallis is also a facility frequently used by senior citizens with water classes targeting senior rehabilitation and physical activity. Currently, the center serves approximately 320 senior participants a day, many receiving much needed affordable physical rehabilitation from injuries or medical problems.

Analysis of Policy Options

Assumptions:

- Elderly individuals living in ADUs could have increased access to senior centers because of the transportation support provided by a relative or caregiver living on the same property.
- Dependent ADUs are most likely to house persons with medical needs receiving care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other Considerations:
Community meeting participants, especially those in Alsea, discussed the difficulty of leaving the town during certain seasons because of weather and road conditions. They generally agreed in the lack of access to other parts of the County where goods and services are located.

Policy Option One: No Policy Change:
No measureable impact on indicator or current health levels. **Impact on health: none (*).**

Policy Option Two: Restriction of Current Rules
Policy option two would have a very small positive impact on health by potentially reducing the number of residences in rural areas far from senior centers. This option would not allow satellite bedroom and accessory units, which would limit the living capacity of those housing units. However, the positive impact would be small and immeasurable because the number of individuals living in these restricted rooms and units is not known and the reduction in future population levels cannot be predicted. **Impact on health: small positive benefit (+).**

Policy Option Three: Dependent Accessory Dwelling Units
This option would have a negative effect on allowing units in locations with poor access to senior centers. As the aging are expected to be a primary benefactor of ADUs, access should be available to the services provided in the more urbanized areas of Corvallis, Philomath and Albany. Under this policy, seniors who dwell in ADUs in rural areas may experience isolation and inactivity from being too far from senior services. These individuals must rely on the assistance on friends and family members or public transit services if available. **Impact on health: moderate negative impact (--).**

Policy Option Four: Independent Accessory Dwelling Units
This option would have a negative effect on allowing units in locations with poor access to senior centers. As stated in previous indicators, this option would likely house more families and able-bodied individuals that would not require access to senior centers. Therefore, while the population living far from centers would be greater under this policy, those residents would not need senior centers compared to those in dependent units allowed by option three. **Impact on health: moderate negative impact (--).**

Policy Option Five: Independent Accessory Dwelling Units in UGB Zones
This option would have a similar negative effect as options three and four. However, the effect would be smaller because ADUs would not be allowed in more remote areas at greater distances from senior centers. **Impact on health: low negative impact (-)**

CONCLUSIONS AND HEALTH PROMOTING MITIGATIONS

As assessed by the indicators above, ADUs in rural Benton County would have an overall negative impact on health for several primary reasons. First, allowing units in rural areas encourages people to live outside of urban areas where basic goods and services are more easily available. Residents of ADUs, or those caretakers and family members of ADU residents, would have reduced access to amenities that improve health such as schools, parks, hospitals and medical clinics, grocery stores and senior centers. If ADUs are allowed because of benefits related to other areas of health, certain mitigations can be implemented to reduce the negative impacts of poor accessibility.

Potential Mitigations for Improving Health Relating to Access to Good and Services:

- Promote self-sufficiency in rural communities, uses that provide basic needs; without travel outside the community (grocery, post office, school, clinic, community center);
- Implement public transportation and/or carpool networks;
- Implement bicycle and pedestrian infrastructure in rural communities;
- Taxing districts to provide recreation programs and parks in rural areas.

CHAPTER FIVE: SOCIAL AND FAMILY COHESION

SOCIAL AND FAMILY COHESION INDICATORS

Social and family cohesion impacts were identified both in the preliminary literature review and in discussions with community members and county staff. This is perhaps the greatest reason why residents are currently requesting ADUs or temporary medical hardship dwelling permits. Social benefits of ADUs include providing living spaces for the elderly, the ill or the disabled near family members or caregivers. Other benefits are associated with maintaining a strong family unit, such as multi-generational housing arrangements. No indicators were available on the San Francisco HDMT that addresses cohesion within a single-family unit. Therefore, measureable indicators were established that capture health conditions potentially effected by ADUs, or that represent a need for the social benefits of ADUs. There are three indicators in this section:

- SFC.1: Proportion of households with a resident over the age of 65;
- SFC.2: Proportion of households with a disabled resident;
- SFC.3: Proportion of households with grandparents as caregivers of children;
- SFC.4: Mortality rates due to suicide by age and gender.

Summary of Chapter Impacts:

- Allowing accessory dwelling units in Benton County would positively impact the indicators of health related to social and family cohesion.
- Policy Option Three would have the greatest positive impact on health.
- Policy Option Two would have the greatest negative impact on health.

SFC.1: Proportion of households with a resident over the age of 65

Health Based Rationale

Elderly residents require specific accommodations and care compared to other populations and age cohorts. Elderly households and individuals are often immobile, on fixed incomes, and have health conditions that require regular medical attention. Communities with high levels of elderly should have increased opportunities for affordable housing, housing that accommodates those with disabilities, accessible and flexible transportation services and centers that provide health and wellness programs, counseling and companionship.[81]

[81] Theresa Brand. Corvallis Senior Center Director. Phone Interview. June 1st 2010.

Because of fixed incomes elderly often become burdened by housing costs and maintenance. High housing costs result in reduced income for other essential needs such as healthy food options, medical care, transportation, heating and utilities and recreational purposes.[82] Immobility leads to isolation in one's home; isolation causes depression and increased mortality rates.[83] Not receiving regular social interaction leads to several medical concerns including depression and poor dietary intake. [84]Immobility also reduces access to basic goods and services and reduced dependence on friends and family members. These burdens make "aging in place" more difficult for elderly potentially causing some to relocate to more affordable residences closer to friends and family or services. Relocation can lead to anxiety and depression during the later stages of life. A 1996 study by the American Association of Retired Persons (AARP) shows that 83 percent of those surveyed said they would prefer to stay in their own home and never move.[85]

Existing Conditions

Table 5.1-Percentage of Households With A Resident Over The Age of 65

	Corvallis	Philomath	Monroe	Adair Village	Benton County	Unincorporated County
	16.9% (3,327)	14% (118)	16.9% (38)	8.2% (14)	18% (5,430)	22.03% (1,933)
Total Households	19,630	1,346	225	170	30,145	8,774

(Source: US Census, 2000)

A larger proportion of households in the unincorporated County have residents of the age of 65 compared to the other incorporated communities. This relatively large percentage shows an opportunity for ADUs to provide multi-generational housing and living spaces for family members or caregivers to provide care as those residents continue to age.

Elderly Householders:

6.7 percent of households in Benton County have householders over the age of 65 living alone. This is the segment of the population that would benefit the most from accessory dwelling units. As of 2007, the County's total population was 85,300 with an unincorporated population of 17,726, or 20.8%[86]. Between 2007 and 2040, the total

[82] San Francisco Department of Public Health, Program on Health, Equity, and Sustainability. The Case for Housing Impacts Assessment: The human health and social impacts of inadequate housing and their consideration in CEQA policy and practice. May, 2004. Available at: http://dphwww.sfdph.org/phes/publications/PHES_publications.htm

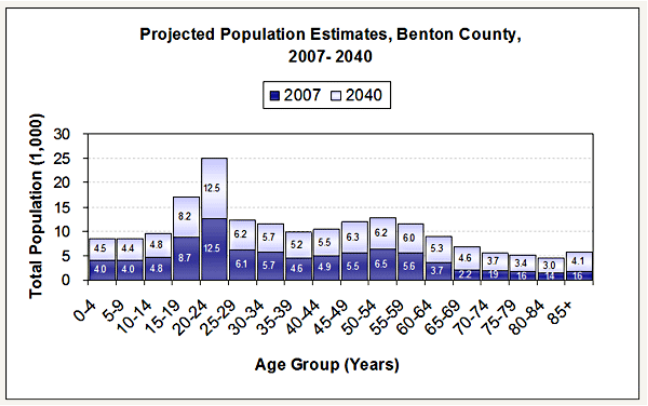
[83] Social relationships and health JS House, KR Landis, and D Umberson (29 July 1988) Science **241** (4865), 540. [DOI: 10.1126/science.3399889]

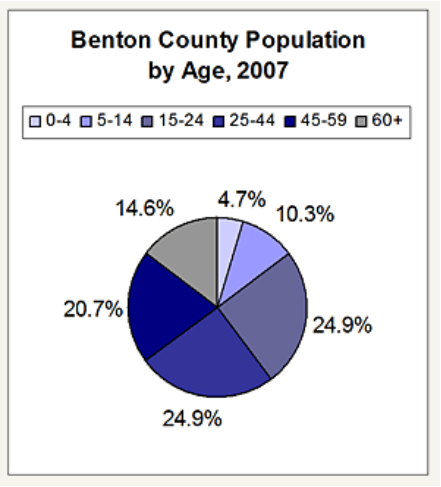
[84] Beauchene, Walker. The Relationship of Loneliness, Social Isolation, and Physical Health to Dietary Adequacy of Independent Living Elderly. Journal of American Dietary Association. 1991 Mar;91(3): 300-4

[85] Chapman, Nancy and Deborah Howe. Accessory Apartments: Are They a Realistic Alternative for Aging in Place? Housing Studies 16(5): 637-650. 2001.

[86] Benton County Health Status Report. (2010) Available at http://www.co.benton.or.us/health/health_status/index.php

population is projected to increase by 17% to 99,886 residents. The graph below shows that the largest growth is projected among those 60 years of age and older with a noticeable 151% increase in those 85 years and older.





Figures 5.2 (Source: Benton County Health Status Report, 2010)

Percentage of Seniors Living Independently:
In 2000, 97.8% of seniors lived independently, or not in a care facility, compared to 98% statewide. Both County and state rates increased from 1990, with 96.5% and 97.1% respectfully.[87] This large percentage and increasing trend indicate that seniors would benefit from having a caregiver or family member near by in an ADU.

Analysis of Policy Options

Assumptions:

- Aging and elderly individuals prefer to stay at their home as they increase in age (also known as "aging in place")
- Permanent dwelling units (attached or detached) might be more preferred than a temporary medical hardship trailer.
- ADUs provide potential living spaces for caretakers of elderly individuals.
- Considering the existing conditions in Benton County, the populations above 65 and 85 years are projected to increase.
- ADUs provide opportunities for multi-generational housing (i.e.- grandparents living in ADU while children and grandchildren live in primary dwelling).
- Dependent ADUs are most likely to house persons with medical needs receive care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals.

[87] Rural Communities Explorer. Oregon State University Rural Studies Program. Accessed at http://oregonexplorer.info/rural/ (2010)

Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other Considerations:
Some research suggests that the aging baby boomer generation is more active than previous generations and enjoys the activities and amenities available in urban areas. It is likely that some rural residents would prefer to move into a unit in a more urbanized area than stay at their home (in an ADU or otherwise) in a rural area with less activities.

Policy Option One: No Policy Change:
No measurable effect on indicator or current health levels. **Impact on health: none (*).**

Policy Option Two: Restriction of Current Rules
The satellite bedrooms and guesthouses no longer permitted under option two could prohibit some multi-generational housing arrangements in the future. Although the option still allows medical hardship dwellings, additional bedrooms could be used to house aging loved ones. This option has a negative impact on health, however the impact is small and immeasurable. **Impact on health: small negative impact (-).**

Policy Option Three: Dependent Accessory Dwelling Units
This policy option would increase the proportion of households with a resident over the age of 65 in the unincorporated County. Dependent ADUs would allow aging homeowners to move into the ADU, provide a residence for a family member or care taker, or provide additional income through rental of one of the units on the property. This option would allow elderly to remain in their homes longer with greater comfort and financial security. The option would also create opportunities for family cohesion by providing options for multi-generational living situations. While the impact on the indicator is small and virtually immeasurable, the indicator shows that the older cohorts of the population are projected to increase the most in coming decades. Dependent ADUs would accommodate aging residents and provide family-centered living situations for providing care and strengthening a family unit. This option would have the largest positive benefit on health and family cohesion. **Impact on health: high positive benefit (+++).**

Policy Option Four: Independent Accessory Dwelling Units
This option would increase the proportion of households with a resident over the age of 65 similarly to option three. There are no significant differences between this policy option and option three. However, option four is less likely to house single aging, ill or disabled individuals and more likely to house unrelated tenant households. Therefore, the benefit of family cohesion would be smaller than option three. **Impact on health: moderate positive benefit (++).**

Policy Option Five: Independent Accessory Dwelling Units in UGB/RUC Zones
Impacts of this option are similar to options three and four, however smaller because only families in UGB areas would be permitted to develop ADUs to house aging friends and

family members. Fewer households would benefit from multi-generational housing, caregiver living space, or living space for an elderly person on the same property with family members. **Impact on health: low positive benefit (+).**

SFC.2: Proportion of households with a disabled resident

Health Based Rationale

Disability encompasses a range of conditions—medical, physical, social, emotional, and societal. Generally, people with disabilities have increased health concerns and susceptibility to secondary conditions. For example, people who have activity limitations report having more days of pain, depression, anxiety, and sleeplessness and fewer days of vitality compared to people who report not having activity limitations. Additionally, people with disabilities may experience disadvantages in health and well being compared to the general population. They may experience lack of access to health services and medical care, which may impact their health status.[88]

Households with disabled residents are more likely to benefit from the social cohesion impacts of accessory dwelling units. Family members or caretakers can more easily provide the care to keep disabled family members more active, provide transportation assistance to access good and services, provide companionship and socialization, assist in medical are or provide reliable access to medical services.[89]

Existing Conditions

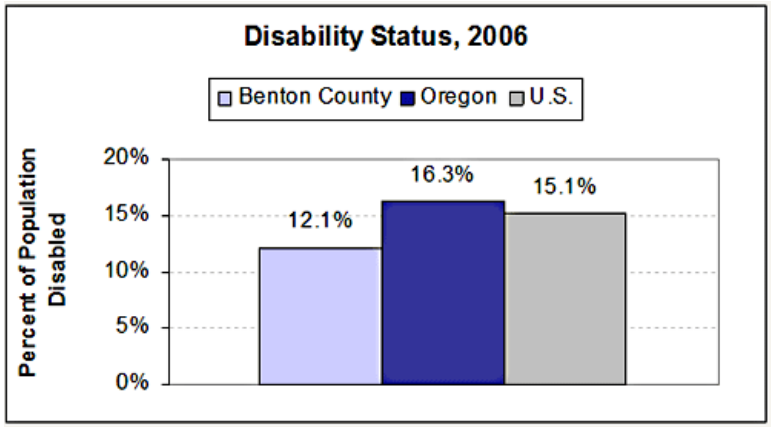


Figure 5.3 (Source: Benton County Health Status Report, 2010)

[88] Benton County Health Status Report. (2010) Available at http://www.co.benton.or.us/health/health_status/index.php

[89] Smith, Jasper. Benton County Health Department Developmental Disabilities Program Director. Personal Communication. June 1st, 2010.

Table 5.4-Percentage of Population With A Disability						
	Corvallis	Philomath	Monroe	Adair Village	Benton County	Unincorporated County
Disabled Individuals	5,978 (12.8%)	494 (13.6%)	106 (17.8%)	65 (13.2%)	9521 (12.9%)	2878 (12.06%)
Total	49,322	3,838	607	536	78,153	23,850

Source: US Census (2000)

In 2000, 12.9 percent of Benton County had a disability. This figure decreased slightly to 12.1% in 2006 as seen in the data from the Benton County Health Status Report. The County's percentage was lower than both the state and nation, with 16.3 and 15.1 respectfully. According to 2000 Census data, 12.06% of the unincorporated county population had a disability.

A large disabled population is not a serious health concern for Benton County. However, the existing disabled residents would benefit from accessory dwelling units that promote family-based care and living situations.

Group Living Homes. An alternative to living at home for many developmentally disabled individuals is group homes, or adult foster homes. These homes provide care along with emersion in social settings and greater independence from family members. There are currently homes located in Corvallis and Philomath but none in the more rural areas of the County. Homes were once operated in Monroe and Alsea but have since been closed.

Analysis of Policy Options

Assumptions:

- ADUs can benefit health and family cohesion in most situations involving a person with a disability.
- ADUs can provide some independence for disabled persons while maintaining a close connection with family members or caretakers.
- Persons living in a medical hardship trailer might prefer to live in a more permanent structure.
- Full-time professional care or boarding in a facility is more expensive than family members providing care to a disabled relative.
- Dependent ADUs are most likely to house persons with medical needs receiving care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other Considerations:

- Some persons with disabilities, such as a developmental conditions or mental health problem, would benefit less from ADUs and living with family members. Mental health specialists suggest that these individuals can regress in social interactions and cognitive skills if they continue to reside at home with family members into adulthood.
- Caring for a family member can cause stress and impose financial burdens for the person providing care.[90]
- The care provided by an untrained family member can be of poorer quality compared to the care available in a group home or from an in-home professional caregiver.

Policy Option One: No Policy Change:
No measurable impact on indicator or current health levels. **Impact on health: none (*).**

Policy Option Two: Restriction of Current Rules
Option two's impact on this indicator is similar to other indicator. The satellite bedrooms and guesthouses no longer permitted under option two could prohibit some multi-generational housing arrangements in the future. Although the option still allows medical hardship dwellings, additional bedrooms could be used to house aging loved ones. This option has a negative impact on health, however the impact is small and immeasurable. **Impact on health: small negative impact (-).**

Policy Option Three: Dependent Accessory Dwelling Units
This option would have a positive benefit on health by providing more opportunities for rural residents to house a disabled resident. Currently, 12.06% of the population has a disability. These residents, and those households that may have a disabled loved-one not currently living in the county, would be able to live closer to family members or caretakers. The existing policy allows for medical hardship trailers but this option would allow disabled individuals that may not qualify for a medical hardship dwelling another opportunity to reside with family. As this option is the most likely option to house the ill, aging, or disabled, this option has the greatest positive impact on social and family cohesion. **Impact on health: high positive benefit (+++).**

Policy Option Four: Independent Accessory Dwelling Units
This option would have a positive benefit to health by allowing persons with disabilities to live near family members and caregivers. As evident in the previous indicator, 12.06% of residents in the unincorporated county have a disability. This is lower than other incorporated cities, but still shows a need for living arrangements for persons with disabilities that ADUs would provide. Independent ADUs would be larger and more likely to house more than one individual; therefore, this policy would have a slightly

[90] Smith, Jasper. Benton County Health Department Developmental Disability Program Director. Personal Communication. June 1st, 2010.

smaller positive impact than the dependent ADUs permitted under option three. **Impact on health: moderate positive benefit (++).**

Policy Option Five: Independent Accessory Dwelling Units in UGB Zones
This option would have a similar benefit as option three and four. However, fewer families would be able to accommodate living arrangements for disabled friends and relatives because of the spatial restriction on where ADUs are permitted for development. **Impact on health: low positive benefit (+).**

SFC.3: Proportion of households with grandparents as caregivers of children

Health Based Rationale

This indicator shows a need for multi-generational housing and a need for untraditional housing accommodations. Grandparents can live in an ADU and care for the children in the primary dwelling whose parents are frequently away. Aging grandchildren can also live in the ADU as they reach adulthood to care for their grandparent that raised them.

When parents are unable to care for their children, grandparents often become primary caregivers and usually with great physical and financial sacrifice.[91] Out of home care, such as foster and group homes, is associated with several childhood developmental challenges such as behavioral disorders, aggression and attachment of relationships.[92] Frequent relocation of youth in foster care results in a lack of connection with a place, poor school performance, difficulty making and keeping friends, and stress and anxiety.[93] Research shows that children raised solely by grandparents do not have significant developmental difference than children raised in traditional households.[94]

Existing Conditions

There are 611 grandparents in Benton County living in a home with one or more grandchildren. Of those 611 grandparents, 248, 0r 40.6 percent are responsible for the care of grandchildren.[95]

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[91] Carbonell, Josefina. Grandparents as Caregivers. Today's Caregiver Magazine. Accessed: June 2010.
[92] Dupree, Davido. Foster Care and Early Childhood Development: Implications For Child Welfare Policy and Practice. Center for Assessment and Policy Development. 2002.
[93] Crowley, Shelia. The Affordable Housing Crisis: Residential Mobility of Poor Families and School Mobility of Poor Children. The Journal of Negro Education. Volume 72(1): 22-38. Winter 2008. URL: http://www.jstor.org/stable/321128
[94] Jennifer Crew Solomon and Jonathan Marx, To Grandmother's House We Go: Health and School Adjustment of Children Raised Solely By Grandparents. The Gerontologist (1995) 35(3): 386-394 doi:10.1093/geront/35.3.386
[95] 2000 US Census Data. http://factfinder.census.gov/home/saff/main.html?_lang=en

Analysis of Policy Options

Assumptions:

- ADUs promote multigenerational housing arrangements, such as grandparents living in homes with children and grandchildren.
- ADUs are supportive of households were grandparents are caring for grandchildren, as the child or grandparent can reside in the accessory unit as they increase in age. The grandparent may require care from the grandchild as they continue to age and the child grows into adulthood.
- Dependent ADUs are most likely to house persons with medical needs receiving care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other Considerations:

Discussion among some County residents suggests that the need for medical hardship trailers continues as multiple generations within a family reach an age that requires caretaking. The trailer may have been needed for the care of one family member but as that person passes away another family member, sometimes one of the original caretakers, needs the unit. In these situations, homeowners would benefit from constructing a permanent ADU rather than a temporary medical hardship trailer.

Policy Option One: No Policy Change:

No measurable impact on indicator or current health levels. **Impact on health: None (*).**

Policy Option Two: Restriction of Current Rules

Option three's impact on this indicator is similar to other indicators. The satellite bedrooms and guesthouses no longer permitted under option two could prohibit some multi-generational housing arrangements in the future. Although the option still allows medical hardship dwellings, additional bedrooms could be used to house grandchildren or aging grandparents. This option has a negative impact on health, however the impact is small and immeasurable. **Impact on health: small negative impact (-).**

Policy Option Three: Dependent Accessory Dwelling Units

Policy option three would have a positive benefit on health by promoting multi-generational housing arrangements. There are 611 grandparents in unincorporated Benton County that live in a home with a grandchild. These grandparents can live in an ADU and stay close to their grandchild, and possible provide assistance to parents raising the children. Of those grandparents, 40.6% are responsible for the care of grandchildren. A

grandparent caring for a grandchild may decide to construct an ADU so that the child can remain on the property as they age. Or, the aging grandparent may decide to move into the accessory unit and be cared for the grandchild as the child reaches adulthood and takes on a caregiver roll. **Impact on health: high positive benefit (+++).**

Policy Option Four: Independent Accessory Dwelling Units
This option is similar to option three. However, residents of independent ADUs are more likely to be families of renting adults than the residents on dependent ADUs. This option would provide options for multi-generational housing and social cohesion, but at a smaller impact than option three. **Impact on health: moderate positive benefit (++).**

Policy Option Five: Independent Accessory Dwelling Units in UGB Zones
Option five would benefit health as in option four, but fewer households would be able to construct ADUs as the policy restricts units from being outside UGB zones. Therefore, the positive impact would be smaller than option four. **Impact on health: low positive benefit (+).**

SFC.4: Mortality rates due to suicide by age group and gender

Health Based Rationale

As elderly individuals age, they often lose spouses and long time friends to death or serious illness. This can lead to isolation, anxiety, depression and an overall reduction in the quality of one's mental and physical health. Elderly individuals can also become depressed because of financial struggles to maintain their homes, decrease physical health and mobility, and fear of the end of life process.[96] Elderly individuals are among the largest age groups experiencing high suicide rates; the highest suicide rates occur in those 65 years of age and older.[97] Companionship and social interaction is a realistic way to battle isolation and improve the mental health of aging persons. Research shows that widowed elderly living alone were more likely to commit suicide than widowed elderly who do not live alone.[98] Accessory dwelling units would provide living spaces for elderly near loved ones or caregivers, reducing isolation, and ultimately depression and potential suicides.

[96] Depression in Older Adults and the Elderly. Helpguide.org. Accessed: June 2010.
[97] Suicide Among the Elderly. National Strategy for Suicide Prevention. United States Department of Health and Human Services. 2010.
[98] El-Nimr, George. Loneliness, Living Alone and Social Isolation in Elderly Suicide. Society of Clinical Physiatrists. Accessed June 2010.

Existing Conditions

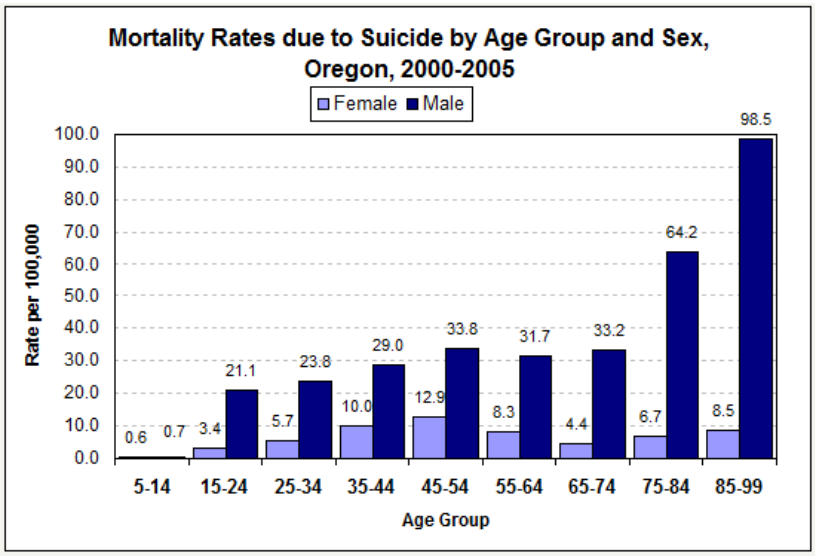

Figure 5.5 (Source: Benton County Health Status Report, 2010)

As apparent in the above graph, elderly men in Oregon over the age of 75 have the highest suicide rates compared to any other age group or gender. Information specifically for Benton County is not available, but approximations are likely equivalent to the statewide rates. Of 65-74 year old men, there were 64.2 suicides per 100,000 persons. Of 85-99 year old men, there were 98.5 suicides per 100,000 persons. Women in these age groups had significantly lower rates, at 6.7 and 7.5, respectively.

Analysis of Policy Options

Assumptions:

- Dependent ADUs are most likely to house persons with medical needs receiving care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Policy Option One: No Policy Change:
No measurable impact on indicator and current health levels. **Impact on health: None (*).**

Policy Option Two: Restriction of Current Rules
Option two's impact on this indicator is similar to other indicator. The satellite bedrooms and guesthouses no longer permitted under option two could prohibit some housing arrangements in the future that allow elderly and needing individuals from living with

family. Although the option still allows medical hardship dwellings, additional bedrooms could be used to house aging loved ones. This option has a negative impact on health, however the impact is small and immeasurable. **Impact on health: small negative impact (-).**

Policy Option Three: Dependent Accessory Dwelling Units
This option provides a positive benefit to health by allowing ADUs where loved ones can live close to family members and caregivers. An individual in mental distress, such as an aging or widowed person, can live in an ADU and benefit from the companionship of his or her relatives living in the primary dwelling. Living near others would reduce isolation and loneliness, improving the overall and mental health of the individual. ADUs would still provide a level of independence and personal space that is not enjoyed when living in the same dwelling unit with relative. **Impact on health: high positive benefit (+++).**

Policy Option Four: Independent Accessory Dwelling Units
Option four provides the same benefit to health as option three. However, residents of independent ADUs are not as likely to be single individuals that are prone to mental distress. The impact on health will be positive, but less of an impact than option three. **Impact on health: moderate positive benefit (++).**

Policy Option Five: Independent Accessory Dwelling Units in UGB Zones
Option five has a similar impact as option four. Because of the spatial restrictions of ADUs in UGB zones only, fewer households would benefit from the social benefits of ADUs. **Impact on health: low positive benefit (+).**

CONCLUSIONS AND MITIGATIONS

As assessed in the indicators above, ADUs would provide positive benefit to public health issues relating to social and family cohesion especially when they are permitted from use as rentals. ADUs provide living spaces for disabled, ill, or aging family members near relatives or caregivers. They provide a more comfortable alternative to care and elderly nursing facilities. Aging homeowners can remain in their home toward the final stages of life with the assistance of a caregiver on site. ADUs also promote multigenerational housing arrangements and a stronger family unit. The unit's permanence is also financially beneficial to homeowners and preferred by the public for aesthetic reasons. Unlike temporary medical hardship trailers that require an initial cost and then must be removed after use, ADUs would remain after use and would contribute to the value of the home. The unit could also be used for more than one person's medical need, as some families experience medical hardships more than once and would benefit from not having to remove a temporary trailer. For these reasons, accessory dwelling units provide significant positive benefit to health. Some mitigations can be implemented to ensure ADUs benefits to health.

Potential Mitigations for Health Issues Relating to Social and Family Cohesion:

- ADUs conditional upon guarantee that only a relative will reside in the unit;
- ADUs conditional upon guarantee that it will not be offered as rental.

CHAPTER SIX: TRANSPORTATION AND MOBILITY

TRANSPORTATION AND MOBILITY INDICATORS

Transportation and mobility was the last major issue category identified in the preliminary research and discussions with panel advisory members. This section addresses the issues of mobility in rural areas where ADUs would be permitted. Five indicators were selected from the San Francisco HDMT or were established based on perceived impacts in Benton County. Each indicator includes a discussion on health-based rationale explaining why the indicator is representative of health. The indicators for transportation and mobility are:

- TM.1: Household access to a private automobile;
- TM.2: Average vehicle miles travelled by rural Benton County residents per day;
- TM.3: Average minutes travelled to work per day by rural Benton County residents;
- TM.4: Access to public transportation services;
- TM.5: Proportion of commute trips made by driving alone.

Summary of Chapter Impacts:

- Allowing accessory dwelling units in Benton County would negatively impact the indicators of health related to transportation and mobility.
- Policy Option Two would have the greatest positive impact on health.
- Policy Option Five would have the greatest negative impact on health.

TM.1: Household access to a private automobile

Health Based Rationale

Research suggests that having an automobile is directly related to increased daily vehicle trips and fewer trips made by public transportation.[99] Auto dependence causes decreased physical mobility, which contributes to the risk of obesity, diabetes, respiratory problems and overall reduction in one's health. The costs associated with car ownership also consume income that could be used of other health promoting purposes such as healthy foods options, health care, energy and utilities and recreational uses.

[99] Golob, Thomas. Effects of Income and Care Ownership in Trip Generation: A Structural Equations Model and Its Temporal Stability. Institute of Transportation Studies. University of California at Urvine. August 1987. http://www.its.uci.edu/its/publications/papers/CASA/UCI-ITS-AS-WP-87-2.pdf

Existing Conditions

In total, 5.7% of housing units are without a personal vehicle with the highest percentages in Monroe and Corvallis, with 8.2% and 7.9% respectively. However, less than one percent of housing units in the unincorporated parts of the County are without a personal. This is likely because the rural character of the unincorporated areas requires a private automobile for basic activities such as purchasing goods at the urban centers and driving to work.

Table 6.1-Occupied Housing Units Without A Vehicle Available

	Corvallis	Philomath	Monroe	Adair Village	Benton County	Unincorporated County
Occupied Housing Units	1,558 (7.9%)	37 (2.7%)	19 (8.2%)	0 (0%)	1,711 (5.7%)	97 (.01%)
Total Units	20,899	1,472	269	178	31,980	9,162

Source: US Census (2000)

Analysis of Policy Options

Assumptions:

- Personal vehicles are needed in the unincorporated County to access employment opportunities and basic goods and services because of a lack of adequate public transportation.
- The dependence on personal automobiles increase the negative health impacts associated with immobility and low physical daily activity.
- Dependent ADUs are most likely to house persons with medical needs receive care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other Considerations:

Access to a private vehicle is essential in rural communities without public transportation services. Rural dwellers rely on personal transportation for basic activities such as going to work or school and grocery shopping.

Policy Option One: No Policy Change:

No measurable impact on the indicator or current health levels. **Impact on health: None (*).**

Policy Option Two: Restriction of Current Rules
Option two restricts future development of accessory units and "satellite" bedrooms. Reducing the bedrooms in a unit will limit the number of residents in that unit. The option will decrease the number of persons in rural locations requiring that require auto dependence and long distance trips to receive basic goods and services in urban areas. However, the true population living in satellite bedrooms is not known and the potential reduction in future population growth cannot be determined. **Impact on health: small positive benefit (+).**

Policy Option Three: Dependent Accessory Dwelling Units
The option will not have an impact on the indicator. Rather, the indicator shows that rural residents are heavily auto-dependent and have access to private vehicles. Residents of dependent ADUs will likely not drive because of an illness or physical mobility. However, if the resident were an able-bodied individual, they would potentially rely on an automobile for basic mobility and daily trips. Option three would increase the number of units in the unincorporated County by a projected 8 units annually. **Impact on health: moderate negative impact (--).**

Policy Option Four: Independent Accessory Dwelling Units
Similarly to option three, option four would not affect the indicator. Rather, the indicator shows a health concern that a vast majority of county households have access to a private automobile. While a private automobile is necessary for accessing basic goods and services in rural areas, auto-dependence has significant health consequences. This option would encourage residency in locations where households must be dependent on a car. Option four would increase the number of units in the unincorporated County by a projected 8 units annually. **Impact on health: high negative impact (---).**

Policy Option Five: Independent Accessory Dwelling Units in UGB Zones
Because fewer units would be projected under this policy (3 units annually), there would be fewer additional households and individuals relocating to places with high private automobile access and auto-dependence. **Impact on health: moderate negative impact (--).**

TM.2: Average vehicle miles travelled by rural Benton County residents per day

Health Based Rationale

Pollution from automobiles has serious health consequences for individual. Air pollution is associated with increase hospitalizations related to cardiovascular and respiratory diseases, heart attacks, and premature deaths in people with heart and lung disease. Air

pollution also increases the severity of asthma symptoms and can limit the amount of time asthma suffers can spend outside doing other physical activities.[100]

Spending more time in one's car and driving longer distances also increases the risk of automobile accidents and car related deaths.[101] Research also shows that the more time spent in the car increases a person's risk of obesity.[102] Driving time could be used for other physical activities that reduce body mass index (BMI), reduce the risk of obesity and improve overall health. Time spent in the car is also time away from family and recreational activities that contributes to improved social relationships and improved mental health. Noise from traffic is also associated with increased stress levels, sleep disturbances, hypertension, blood pressure and heart disease.[103] Children exposed to high levels of noise are at a higher risk of experiencing learning delays.[104]

Existing Conditions

Table 6.2-Vehicle Miles Travelled in Benton County (On State Highways)										
	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
VMT in Millions [105]	239	239.1	256.4	258.1	255.9	261.9	263.8	260.5	256.8	254.8
Average VMT Per Capita[106]	2,755	2,776	2,982	3,068	3,089	3,203	3,277	3,260	3,250	3,254

In 2009, Benton County's total vehicle miles travelled (VMT) was 239,000,000 at a per capita average of 2,755 miles. This figure is slightly less than the previous years as seen in Table 6.2. Average VMT has dropped 16% from 2004 to 2009. In the same period, the

[100] U.S. Environmental Protection Agency. 2001. Vehicle travel: Recent trends and environmental impacts. Our Built and Natural Environments: A Technical Review of the Interactions Between Land Use, Transportation, and Environmental Quality. Chapter 4. U.S. Environmental Protection Agency. Available at http://www.epa.gov/smartgrowth/pdf/built_chapter3.pdf.

[101] Lourens PF, Vissers JA, Jessurun M. 1999. Annual mileage, driving violations, and accident involvement in relation to drivers' sex, age, and level of education. Accident Analysis & Prevention. 31(5):593-7.

[102] Frank LD, Andresen MA, Schmid TL. Obesity relationships with community design, physical activity, and time spent in cars. Am J Prev Med. 2004;27(2):87-96.

[103] Miedema HME, Vos H. 1998. Exposure response for transportation. Journal of the Acoustical Society of America. 104:3432-3445; Seto, EYW, Holt A, Rivard T, Bhatia R. 2007. Spatial distribution of traffic induced noise exposures in a US city: an analytic tool for assessing the health impacts of urban planning decisions. International Journal of Health Geographics. 6:24. http://www.ij-healthgeographics.com/content/6/1/24

[104] Evans GW. 2006. Child development and the physical environment. Annual Review of Psychology 57:423-451.

[105] Oregon Department of Transportation. *Oregon Vehicle Miles Travelled (VMT) by County.* http://www.oregon.gov/ODOT/TD/TDATA/tsm/vmtpage.shtml#Oregon_VMT_by_County

[106] Calculated using Portland State University Population Estimates Data. (2010) accessed at http://www.pdx.edu/prc/.

State's average VMT decreased 13.2% from 5,975 in 2002 to 5,186 in 2009. Comparatively, Benton County's VMT is significantly lower than Oregon.

Analysis of Policy Options

Assumptions:

- Residents in rural areas are more likely to drive more than urban dwellers that live closer to goods and services.
- Dependent ADUs are most likely to house persons with medical needs receiving care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other Considerations:

If an aging, ill or disabled individual lived in an assisted care facility in an urban center, rural family members are likely to drive multiple times a week into the city to visit their loved ones. If the individuals lived in an ADU on their family's property in a more rural area, family members would not need to drive to and from the urban center leading to a reduction in total VMT.

Policy Option One: No Policy Change:

No measurable impact on indicator or current health levels. **Impact on health: None (*).**

Policy Option Two: Restriction of Current Rules

Option two restricts future development of accessory units and "satellite" bedrooms. Reducing the bedrooms in a unit will limit the number of residents in that unit. The option will decrease the number of persons in rural locations requiring that require auto dependence and long distance trips to receive basic goods and services in urbanized areas. However, the true population living in satellite bedrooms is not known and the potential reduction in future population growth cannot be determined. **Impact on health: small positive benefit (+).**

Policy Option Three: Dependent Accessory Dwelling Units

Option three will have a negative impact on the indicator by placing more residents in rural areas. However, if the dependent dwelling units are used primarily by family members for medical care purposes the total VMT could potentially decrease. As stated in the indicators considerations, family member living in rural areas that frequently drive to urban areas to visit loved ones would reduce their VMT if that family member lived in an ADU. Caregivers living on the same property with an elderly or ill person would

reduce their VMT if they were previously driving from urban areas. The resident of the ADU would also have a small, if any, VMT because of a lack of mobility or inability to operate a vehicle. Because of these opposing conclusions, the indicator is predicted to have a net zero, or no impact on the indicator. **Impact on health: none (*).**

Policy Option Four: Independent Accessory Dwelling Units
Option four would generate a small increase in VMT as residents of independent ADUs are more likely to drive long distances to urban areas. However, the projected 8 units annually would not generate a significant change in total VMT. Eight additional units, with a minimum of 1 person per unit, would generate 22,040 VMT per year (8 persons x average 2009 VMT of 2755 = 22,040). This figure is less than 1% of the county's total. **Impact on health: low negative (-).**

Policy Option Five: Independent Accessory Dwelling Units in UGB Zones
This option is similar to option four but would generate even fewer VMTs per year. Three additional units, with a minimum of 1 person per unit, would generate 8,265 VMT per year (3 persons x average 2009 VMT of 2,755 = 8,265). This figure is less than 1% of the county's total. **Impact on health: low negative (-).**

TM.3: Average minutes travelled to work per day by rural Benton County residents

Health Based Rationale

The longer one spends in a car driving to and from work the less time one has for physical activities that promote overall mental and physical health.[107] Long commutes also increase the costs associated with getting to and from work, leaving less income for other uses such that promote health such as housing, healthy food options, health care and recreational activities. Auto-dependence and high driving rates increases vehicle emissions, which is associated with lung and respiratory disease, cardiovascular disease, increased hospitalization rates, and non-fatal heart attacks.[108]

Existing Conditions

Table 6.3-Mean Travel Time to Work (In Minutes)

	Corvallis	Philomath	Monroe	Adair Village	Benton County	Unincorporated County
Mean in Minutes	15.3	16.9	26.1	18	17.8	N/A

Source: 2000 US Census

[107] Frank L, Andersen, M, Schmid, T. 2004. Obesity relationships with community design, physical activity, and time spent in cars. American Journal of Preventative Medicine. 27;87-96.
[108] U.S. Environmental Protection Agency. 2001. Vehicle travel: Recent trends and environmental impacts. Our Built and Natural Environments: A Technical Review of the Interactions Between Land Use, Transportation, and Environmental Quality. Chapter 4. U.S. Environmental Protection Agency. http://www.epa.gov/smartgrowth/pdf/built_chapter3.pdf

The average minutes travelled to work by Benton County residents is 17.8. This is lower than both the state and national averages of 22.2 and 25.5 minutes, respectively.[109] While the mean of unincorporated county residents is not known, it is likely to be higher than the averages in Corvallis (15.3 minutes) and Philomath (16.9 minutes) because of these cities proximities to more job opportunities. Rural residents, like those in Monroe (26.1 minutes), will drive longer to get to work.

Analysis of Policy Options

Assumptions:

- Residents in rural locations tend to drive more than urban residents.
- The most likely residents of ADUs are the elderly, ill, or disabled. These individuals are less likely to be employed and will not have significant impacts on the health indicator.
- Dependent ADUs are most likely to house persons with medical needs receiving care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other Considerations:

- There are jobs located in the rural parts of the county. These employees would decrease their minutes traveled to work by living near their employment sites as opposed to living within a city.

Policy Option One: No Policy Change:
No measurable impact on indicator or current health levels. **Impact on health: None (*).**

Policy Option Two: Restriction of Current Rules
Option two restricts future development of accessory units and "satellite" bedrooms. Reducing the bedrooms in a unit will limit the number of residents in that unit. The option will decrease the number of persons in rural locations that require auto dependence and long distance trips to receive basic goods and services in urbanized areas. However, the true population living in satellite bedrooms is not known and the potential reduction in future population growth cannot be determined. **Impact on health: small positive benefit (+).**

Policy Option Three: Dependent Accessory Dwelling Units

[109] US Census Data. (2000) accessed at http://factfinder.census.gov/home/saff/main.html?_lang=en

Option three would have a negative impact on the indicator, but the impact would be small and insignificant. Expected residents of ADUs are the elderly, ill or severely disabled that won't be making daily commuting trip to jobs in urban area. Therefore, the increase of population will not generate a significant increase in the County's mean travel time to work. If residents of the projected 8 ADUs requested annually were working adults, the impact would still be too small to generate a measurable impact on the indicator. **Impact on health: low negative impact (-).**

Policy Option Four: Independent Accessory Dwelling Units

This option has the potential to create a negative impact on the indicator, although too small to see a measurable change. Aside from housing elderly or disabled persons, independent ADUs are more likely to house families with working aged individuals that would have to drive into urbanized areas for work opportunities. The true residents of independent ADUs cannot be predetermined, but this option is the most likely to allow the relocation of citizens in rural areas that require longer driving distances. If the 8 requested ADUs annually house at a maximum two working adults, the impact would be greater than policy three, but still too small to see a measurable change. **Impact on health: low negative impact (-).**

Policy Option Five: Independent Accessory Dwelling Units in UGB Zones

Option Five would have a small negative impact on the indictor. This option also has a greater potential of housing working members of families that would need to drive to work. However, because the units in this option are limited to UGB and RUC zones, the mean travel time to work would be affected less than a policy that allows ADU development anywhere in the County. Units in UGB/RUC zones are closer to urbanized areas with more work opportunities, leading to a small increase in the mean minutes travelled to work if the policy were approved. Because of the 3 projected permit requests annually under this option, the impact on the indicator is too small to measure. **Impact on health: low negative impact (-).**

TM.4: Access to public transportation services

Health Based Rationale

Research shows that people who use public transportation are more likely to get their required levels of daily physical activity compared to those that do not use transit.[110] Walking and biking to and from transit stops increases physical activity and reduces time spent in a private automobile. Health benefits of walking and biking include reduced risk of colon cancer, hypertension, heart disease and diabetes. Increased physical activity also decreases one's risk of obesity and improves overall quality of health.[111]

[110] Besser LM, Dannenberg AL. Walking to public transit: steps to help meet physical activity recommendations. Am J Prev Med. 2005;29(4):273-80.

[111] Task Force on Community Preventive Services. Increasing Physical Activity: A Report on Recommendations of the Task Force on Community Preventive Services. Morbidity and Mortality Weekly Report. October 26, 2001.

However, use of public transit is dependent upon the accessibility of transit stops, desired routes, and service frequency. Evidence shows that one's proximity to public transit help to determine travel choice.[112] Using public transportation as opposed to personal automobiles also reduces the costs associated with transportation providing additional income for other uses such as housing, heating and utilities, healthy food options and recreational activities.

Access to transit also provides transportation options for populations that would otherwise be immobile. The elderly, disabled individuals, and low income families require reliable and affordable transit options for daily activities such as travelling to work, going to doctors appointments, shopping and recreational activities or visiting friends and family. Elderly individuals struggle to use public services because of physical limitations of walking to and from transit stops. Disabled residents need services that accommodate their specific disability while providing the highest levels of independence. Low-income families require the most flexibility because most work or have multiple shifts that do not fit traditional transit services schedules. Language and cultural barriers also become limitations to using public transit.[113] Flexible, reliable and accommodating service benefits these groups the most and promotes mobility for basic activities while increasing physical activity.

Existing Conditions

- As of 2008, an estimated 1.7% of Benton County residents used public transportation to get to work.
- As of 2008, an estimated 4.2 % of Oregonians used public transportation to get to work. This is reflective of the over 12% of Portland residents, and not the more rural areas of the state more similar to Benton County.

Available Services:
Transportation services in Benton County are primarily concentrated within the City of Corvallis. The Corvallis Transit System (CTS) services the City of Corvallis and operates the Philomath Connection offering routes between Corvallis, Oregon State University and Philomath. The Coast to Valley Express provides direct service between Corvallis and The City of Newport in Lincoln County but does not service additional stops along the Highway 20 corridor. Service is available between Adair Village and Corvallis 5 days a week, with 4 to 6 trips daily. Service is also available between Monroe and Corvallis 5 days a week, with 4 to 6 trips daily. Routes are offered between Monroe and Junction City (Lane County) two days a week. An additional route between Monroe and Corvallis is planned for operation in later 2010.

[112] Ewing R, Frank L, Kreutzer R. Understanding the Relationship between Public Health and the Built Environment: A Report to the LEED-ND Core Committee. 2006.

[113] Public Transportation for the Elderly, Disabled and Low Income: Phase I-Needs Assessment Report. Richmond Area Metropolitan Planning Organization. 2 Feb 2006. Accessed at: http://www.richmondregional.org/Publications/Reports_and_Documents/Eld_Disbld_Trans_Disadv_Report_FINAL_Feb_06.pdf

The Linn-Benton Loop provides daily service between Corvallis and the City of Albany in Lane County with limited stops along Highway 20 in rural Benton County. The loop is popularly used by Oregon State University students and staff, Linn-Benton Community College students and staff, and Hewlett-Packard employees.

Dial-A-Bus Benton County:
Dial-A-Bus is a non-profit service based in Corvallis that provides door-to-door transportation services for the elderly and disabled. Seniors over the age of 60 and ADA certified disabled individuals of any age receive on call service to any location in the county. The service is ADA and wheelchair accessible, making public transportation more accessible for these populations and flexible to their specific physical needs. Dial-A-Bus has plans to provide additional routes between Adair and Monroe with connections to Junction City beginning in August of 2010. Currently, routes are offered between Corvallis and Albany.

Analysis of Policy Options

Assumptions:
- If workers in the unincorporated County are not taking public transportation to work, they are likely driving in an automobile because walking is difficult due to lack of proper pedestrian infrastructure and the rural nature of the area.
- Dependent ADUs are most likely to house persons with medical needs receive care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other Considerations:
- Aging, ill or disabled individuals living alone may need increased access to public transit services to maintain mobility. However, if the individual lived in an ADU near a relative or caregiver, the relative or caregiver could provide transportation assistance reducing the need for public transit.
- Transit services will be expanded in the future to places with high ridership and great need for mobility. Allowing ADUs would contribute to an increase in the population of rural areas and expand the ridership and need for public transit services.

Policy Option One: No Policy Change:
No measurable change in indicator and current health levels. **Impact on health: None (*).**

Policy Option Two: Restriction of Current Rules
Option two would have a possible positive impact on the accessibility of transportation services. Under this policy, satellite and guest bedrooms would no longer be permitted meaning that there would potentially be fewer residents living in the unincorporated County. These residents would be living in places without proper access to public transportation services. Therefore, this policy would influence residents to live in more urbanized areas that might otherwise live in a satellite bedroom or guest house. **Impact on health: small positive benefit (+).**

Policy Option Three: Dependent Accessory Dwelling Units
This policy option would have a negative effect on the indicator by allowing the development of more units in locations without proper public transit services. Residents of ADUs would have to rely on private automobile for basic trips for employment and receiving goods and services. However, the dependent nature of ADUs allowed under this policy would likely be used to house aging, ill, or disabled family members needing care. These populations are less likely to use public transit services because of physical limitations or dependence on others. (See indicator TM.5 for projected changes in drive alone commuter trips) **Impact on health: moderate negative impact (--).**

Policy Option Four: Independent Accessory Dwelling Units
This option would have the greatest negative impact on the indicator of the assessed policy options. Independent ADUs are more likely to house multiple persons or larger families that need public transit services. This policy would allow the development of units that place people out of transit service areas, which promotes the use of private automobiles and its associated health risks. (See indicator TM.5 for projected changes in drive alone commuter trips) **Impact on health: high negative impact (---).**

Policy Option Five: Independent Accessory Dwelling Units in UGB Zones
This option would have a negative impact on the indicator by allowing the development of additional units in locations without adequate public transit service. This option would have a smaller negative impact compared to option four because units would only be allowed in UGB zones that have greater access to transit services. However, even the UGB zones not directly adjacent to more urbanized areas lack convenient and accessible public transportation options. (See indicator TM.5 for projected changes in drive alone commuter trips) **Impact on health: low negative impact (-).**

TM.5: Proportion of commute trips made by driving alone

Health Based Rationale
Similarly to the above indicators, driving alone in a private vehicle reduces the amount of daily physical activity received. Physical activity has many positive health effects including reduced risk of obesity, certain cancers, hypertension and heart disease, and diabetes. Single occupancy trips also contribute to increased VMT which increase air

pollution from automobile emissions, increases noise pollution, and increases the number of vehicle related injuries and deaths.[114]

Existing Conditions

Table 6.4-Proportion of Commuters Who Drove To Work Alone						
	Corvallis	Philomath	Monroe	Adair Village	Benton County	Unincorporated County
Proportion of Trips	66.2% (15,531)	75.8% (1,422)	76.6 (223)	75.2% (191)	70.7% (26,682)	N/A

(Source: 2000 US Census)

As shown in Table 6.4 above, 73.2% of Oregon workers drove to work by themselves, which is slightly less than most communities in Benton County excluding Corvallis (66.2%). The unincorporated County proportion is unknown but is expected to be comparable to the more rural communities of Monroe (76.65) or Adair Village (75.2%)

Analysis of Policy Options

Assumptions:

- Rural dwellers are more likely to drive to work alone than other transportation options such as carpooling, walking, biking or taking public transit.
- Dependent ADUs are most suitable for single individuals, especially the elderly, ill and disabled. However, dependent ADUs have the potential to house working age individual that commute daily by driving alone.
- Independent ADUS could potentially house more than one drive-alone commuter because their size is more suitable for larger households compared to dependent ADUs.
- Dependent ADUs are most likely to house persons with medical needs receiving care from family members or caretakers because of their dependence on the primary dwelling.
- Independent ADUs may still be used to house persons with medical needs receiving care from family members or caretakers, however, the larger and independent nature of the units make them more prone to be used as rentals. Residents of rental units would be more reflective of the general population including working aged adults, children, and multiple tenants.

Other Considerations:

- During the Alsea focus group, community members talked about the desire and potential to organize commuting carpools to Philomath and Corvallis.

[114] Ewing R, Frank L, Kreutzer R. Understanding the Relationship between Public Health and the Built Environment: A Report to the LEED-ND Core Committee. 2006.

Policy Option One: No Policy Change:
No measurable impact on indicator or current health levels. **Impact on health: None (*).**

Policy Option Two: Restriction of Current Rules
Option two restricts future development of accessory units and "satellite" bedrooms. Reducing the bedrooms in a unit will limit the number of residents in that unit. The option will decrease the number of persons in rural locations requiring that require auto dependence and long distance trips to receive basic goods and services in urbanized areas. However, the true population living in satellite bedrooms is not known and the potential reduction in future population growth cannot be determined. **Impact on health: small positive benefit (+).**

Policy Option Three: Dependent Accessory Dwelling Units
This policy option could have a small negative impact on the indicator by increasing the proportion of County commute trips made by driving alone. If working individuals move into an ADU in a rural area, they are more likely to drive to work alone because of a lack of carpooling opportunities, public transit options and infrastructure for walking or biking. However, the impacts of this policy are smaller than policy four because residents of dependent ADUs are more likely to be the elderly, ill or disabled that make fewer work related trips. Assuming that, at most, dependent dwelling units will house one commuting adult, this option will generate 8 additional drive alone commuters annually. The policy will increase the proportion of workers commuting by driving alone by less than 1%. After ten years of implementation the number of additional ADUs will be approximately 80, which will still impact the indicator by less than 1%. **Impact on health: low negative impact (-).**

Policy Option Four: Independent Accessory Dwelling Units
Policy option four would have a similar negative impact on the indicator by potentially increasing the proportion of commute trips in Benton County made by driving alone. This option would have the greatest, although small, impact because residents of independent ADUs are more likely than dependent ADUs to include workers who make daily commuting trips. Assuming that, at most, independent dwelling units will house two commuting adults, this option will generate 16 additional drive long commuters annually. The policy will increase the proportion of workers commuting by driving alone by less than 1%. After ten years of implementation the number of additional ADUs will be approximately 160, which will still impact the indicator by less than 1%. **Impact on health: low negative impact (-).**

Policy Option Five: Independent Accessory Dwelling Units in UGB Zones
Option five would have a negative impact on the health indicator, but the impact would be smaller than policy options three and four because fewer units would be allowed to development ADUs. Of those units allowed to develop units, more are located within accessible distance to alternative transportation options other than driving to work alone. If approved, this option would generate an estimated 3 ADU permit requests annually within UGB zones. Assuming that, at most, independent dwelling units will house two

commuting adults, the policy option will increase the proportion of workers commuting alone by less than 1%. After ten years of implementation the number of additional ADUs will be approximately 30, which will still impact the indicator by less than 1%. **Impact on health: low negative impact (-).**

CONCLUSIONS AND MITIGATIONS

As assessed in the indicators above, ADUs have a low to moderate impact on health issues relating to transportation and mobility. Rural ADUs would be farther away from amenities in urban areas (as assessed in Access to Goods and Services Indicators). However, the predicted and preferred residents of ADUs will not significantly contribute to County driving levels. ADU residents are likely aging persons or persons with disabilities, both populations that are not considered daily commuters and would not require high auto dependence. A possible scenario is that ADUs would increase health if family members who make frequent trips to visit loved ones in care facilities would no longer have to make those trips. However, despite these benefits, ADUs in rural areas would have a negative impact on total auto dependence in the County. A lack of pedestrian and bicycle infrastructure in the unincorporated county also discourage residents from walking that may live within walking or biking distance to certain amenities. There are potential mitigations that can minimize negative health impacts if ADUs are approved.

Potential Mitigations for Promoting Health Relating to Transportation and Mobility:

- Implement public transportation and/or carpool networks;
- Road improvement fees assessed to new units;
- Promote self-sufficiency in rural communities, uses that provide basic needs without travel outside the community (grocery, post office, school, clinic, community center);
- Limit size and occupancy of ADU (to limit number of autos/drivers);
- Implement bicycle and pedestrian infrastructure in rural communities;
- Improve high-speed internet access in rural areas to facilitate working from home.

CHAPTER SEVEN: FINDINGS, MITIGATIONS AND RECOMMENDATIONS

IMPACTS ON INDICATORS SUMMARY

The table below summarizes the impacts of each policy option on the indicators of health for rural Benton County residents. A "-" symbol indicates that the policy has a positive effect on the indicator and would positively affect health. A "-" symbols denotes a negative effect on the indicator and a negative impact on health. A "*" symbol indicates that the policy has no impact on the indicator or that the effect is not significant enough to impact health.

The rankings for each policy are summed under the four categories. These numbers should not be compared category to category as some categories have more indicators than others. The accumulated scoring can be used to compare policies against each other in the last row of Table 7.1. The scoring totals are purely comparative, and do not represent a quantification of the policies impacts.

Table 7.1-Summary of Policy Impacts on Health Indicators

	Policy Options				
Indicator	One	Two	Three	Four	Five
Health Housing	0	-4	5	8	4
HH.1: proportion of households paying more than 30% or 50% of their total household income on gross rent or mortgage	*	-	+	++	+
HH.2: proportion of housing unit types to housing need by household size and income	*	-	+	++	+
HH.3: Proportion of households living below the poverty line	*	-	+	++	+
HH.4: Proportion of households living in overcrowded and substandard conditions.	*	-	++	++	+
Access to Goods and Services	**0**	**5**	**-10**	**-14**	**-9**
AGS.1: Proportion of households within ½ mile of a public school	*	+	--	---	--
AGS.2: Proportion of population within ½ mile of a public park or recreational facility	*	+	--	---	--
AGS.3: Accessibility of full-service grocery store/supermarket	*	+	--	---	--
AGS.4: Average distance to the nearest hospital, urgent care clinic, or other medical facility	*	+	--	---	--
AGS.5: Accessibility to Senior Centers	*	+	--	--	-
Family and Social Cohesion	**0**	**-4**	**12**	**8**	**4**
SC.1: Proportion of households with a resident over the age of 65	*	-	+++	++	+
SC.2: Proportion of households with a disabled	*	-	+++	++	+

resident					
SC.3: Proportion of households with grandparents as caregivers of children	*	-	+++	++	+
SC.4: Mortality rates by age and gender	*	-	+++	++	+
Transportation and Mobility	**0**	**5**	**-5**	**-9**	**-6**
TM.1: Household access to a private automobile	*	+	--	---	--
TM.2: Average vehicle miles travelled by rural Benton County residents per day	*	+	*	-	-
TM.3: Average minutes travelled to work per day by rural Benton County residents	*	+	*	-	-
TM.4: Access to public transportation services	*	+	--	---	-
TM.5: Proportion of commute trips made by driving alone	*	+	-	-	-
Total cumulative Impact	**0**	**2**	**2**	**-7**	**-7**

FINDINGS ON IMPACTS

- **Options two and three have the most positive benefit to health.**
- **Options four and five have the most negative impact on health.**

The assessment shows that the indicators within each category will have a similar impact on health. Indicators in the Health Housing category show that option two has the greatest negative effect on health and option four has the greatest positive effect. In Access to Goods and Services, option two has the greatest positive benefit to health and option four has the greatest negative benefit. For Social and Family Cohesion, option two has the greatest negative impact and option three has the most positive negative benefit. Lastly, in Transportation and Mobility, option two has the greatest positive benefit and option four has the greatest negative impact.

Many of the true impacts for most indicators will be relatively small as the projected number of ADU permits annually represents a very small portion of total housing units. However, indicators relating to access (in Access to Goods and Services and other categories) and social benefits were ranked as having the most significant impacts because these were the greatest areas of concern for stakeholders. Homeowners frequently call the Planning Department requesting ADUs for social purposes, and staff recognizes these needs as legitimate. Staff and the public also recognize the lack of amenities and basic services in some of the more rural parts of Benton County. For these reasons, allowing ADUs will have the greatest negative impact on health issues relating to accessibility of goods and services and the greatest positive benefit to social and family cohesion.

Overall, options two and three have the greatest potential to positively affect health. Options four and five have significant negative impacts compared to options two and three. Option one, because it does not change the indicators, will have no measureable impact on health.

POLICY RECOMMENDATION

Based on the conclusions from the indicator assessments, it is recommended that **Policy Option Three: Dependent Accessory Dwelling Units** be adopted with certain mitigations. Recommended mitigations include:

1. Include a condition in the permit requiring ADU resident to be the homeowner, a relative, or a caretaker. This condition is enforced through citizen complains;
2. Include a condition in the permit requiring ADU to not be used as a rental unit. This condition is enforced through citizen complains;
3. Review the policy after 1, 5, or 10 years per the planning departments recommendation to review the number of units built, impacts on built environment and health, complaints from neighbors, etc.
4. Set an ADU "cap" at 8, 10, 12 permits annually per the planning departments recommendation. This cap may be increased, reduced or removed after the initial review of the policy is completed.

Rationale for Recommendation:

Policy Option Three (a reduction in current rules) was ranked with Policy Option Two (dependent dwelling units) to have the greatest positive benefit to health. The social benefits associated with Option Three and Dependent ADUs have been identified through the HIA process as both the Health Department's and public's highest priority. Option two has potential negative health impacts related to lack of accessibility and increased auto dependence. However, the identified social benefits of accommodating families with medical hardships are considered to outweigh any other identified negative impacts.

Rationale for Mitigations:

1. Assessment shows that ADUs have the greatest benefit to health, and particularly social and family cohesion, when they are used by family members and not used as rentals.
2. Restricting residency to relatives and caregivers will promote family cohesion and ensure that ADUs are being used to accommodate persons with medical hardships. Restricting units from use as rentals limits conflicts with neighbors and discourages residency in rural areas far from basic amenities. This mitigation may reduce the positive health benefits associated with additional affordable housing opportunities. However, both the Health Department and the public do not consider ADUs a feasible solution to housing issues because of their smaller size and high development costs. The primary goal of an ADU policy remains to increase the health benefit related to accommodating ill, aging, or disabled relatives.

3. Requiring a review of the policy is intended to identify any unexpected negative impacts to health and the built environment. The review allows staff to identify those impacts and amend the policy as necessary to ensure successful implementation in the future.
4. A unit cap is intended to pace the issuance of permits to minimize any initial and unexpected impacts. Assessments were based on a modest projection from both existing literature and past Planning Department experiences. There is a possibility that, if approved, permit requests can exceed these estimates and impacts will be much higher than predicted. The cap can be reassessed several years after implementation to more appropriately reflect the true demand of ADUs.

HIA MONITORING PLAN

The Benton County Health Department chronic disease prevention team will allocate staff time to the monitoring of results and impact of this Health Impact Assessment. The goals of the monitoring of this HIA are:

1. Is the HIA well received by county staff and elected officials?
2. Does the HIA have an impact on decision-making?
3. Does the HIA increase interest in incorporating new HIAs into future work?
4. If policy changes do occur, how accurate were the findings of the potential health impacts in this report?

Health Department staff will present this report to Benton County staff, the County planning commission, and County Board of Commissioners for review. Health Department staff will also follow up with each of these entities with the results of monitoring and in planning for future work.

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