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Oklahoma Humane Society Compassion Center Economic Impact Study

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Oklahoma Humane Society Compassion Center Economic Impact Study



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Executive Summary

The Central Oklahoma Humane Society (OK Humane) is looking to assess the potential economic, community, and public health impacts of building and operating an innovative animal sheltering concept called the Compassion Center in downtown Oklahoma City, Oklahoma. Using Impact Analysis for Planning (IMPLAN) software, this report quantifies the proposed center's direct, indirect, and induced effects on the economy of Oklahoma City.

Over a five-year period, the results show the center could have an economic impact of:

\$118,566,405

These numbers include the impacts from both the construction of the center in year one and the impacts from ongoing operations in years two through five, assuming no change in the center's operations or economic impact over that time.

In addition to the economic impact calculated with IMPLAN, this paper also explores urban amenity complex and One Health (connectivity between people, animals and the environment) impacts, both economic and otherwise, which could result from the Compassion Center's presence. Some of the potential impacts discussed include:

- **Increased rates of volunteering and engagement with animal welfare issues:**

Building the center in the middle of the highly walkable urban amenity complex means there will be a high volume of foot traffic. This could increase the number of individuals who engage with the shelter through awareness, volunteer opportunities, and/or general community programming.

- **Increased brand equity:**

As an anchor for the urban amenity complex, the center may serve as an internal and external indicator that the community that Oklahoma City values animal welfare and the human-animal bond.

- **Decreased obesity rates:**

The expansion of walkable areas of the city and the increased presence of animals in the community may lead to the adoption of healthier, more active lifestyles and a decrease in Oklahoma City's obesity rate.

- **Decreased health care expenditures:**

A decrease in obesity and other loneliness and inactivity-related physical and mental health conditions would decrease Oklahoma City’s health care expenses.

- **Increased productivity:**

The opportunity to be active during the workday is associated with increased work productivity of employees.

- **Decreased mental health expenditures:**

Access to companion animals as well as green spaces like those incorporated into Oklahoma City’s urban amenity complex can enhance mental health and decrease mental health-related expenditures.

- **Increased social capital:**

The increased presence of companion animals in a community can act as a social bridge between people and enhance community cohesion.

- **Humane education:**

Educational programming provided by the Compassion Center can promote the connection with, and responsibility for, all animals, leading to greater respect for all living things.

This paper concludes that the proposed Compassion Center would have an overwhelmingly positive economic and community impact on both the people and homeless companion animals of Oklahoma City.

Central Oklahoma Humane Society (OK Humane): Building a Humane City

OK Humane Introduction and Overview

OK Humane, located in Oklahoma City, Oklahoma, was founded in 2007 with the mission to “enrich the communities it serves by promoting the wellbeing of animals” (Central OK Humane Society, 2016). OK Humane works in close partnership with the Oklahoma City Animal Welfare (OKC Animal Shelter) and other local shelters, maintaining a primary focus on the elimination of needless euthanasia of healthy, adoptable animals in Oklahoma City. Since 2007,

OK Humane has found homes for over 20,000 cats and dogs and spayed and neutered more than 100,000 companion animals. In addition to fostering and adoption services, OK Humane offers low cost sterilization, vaccinations, microchipping, and other basic preventative care to the public at their OK Humane Place Clinic. They also provide community-based programs such as Barn Buddies and Trap, Neuter, Return for feral cats, Homeward Bound Relocation to move dogs from Oklahoma to other areas of the country where they stand a better chance of adoption, a Bottle Babies Nursery for orphaned infants, as well as Humane Education to help area school children learn about companion animal care basics while also encouraging attitudes of kindness, respect, and compassion for all life. OK Humane is a 501(c)(3) nonprofit organization that is funded solely by donations, grants, and bequests. It receives no government funding or tax dollars.

OK Humane and other animal shelters not only serve the animals of the community, but also the people of the community as both a conduit for accessible companion animal-related services and a foundation for expanded pet ownership. In support of their vision to “make the compassionate and respectful treatment of animals a prevalent community value and the well-being of animals a community priority” (Central OK Humane Society, 2016), OK Humane is evaluating the creation of a Compassion Center in downtown Oklahoma City. The center would house 500 companion animals at any one time with the goal of 5,000 annual adoptions. An anticipated 70% of companion animals at the center would come from the municipal shelter while 30% would be owner relinquished. The center would be an innovative space designed to fulfill the basic functions of an animal shelter while also serving as a community gathering place that supports the citywide effort to improve the overall health of both human and animal residents of the city.

In addition to the programs already in place at OK Humane, the proposed center would serve as a convenient destination, with innovative programming aimed at utilizing the green space to optimize the benefits of the human-animal bond in an intrinsically therapeutic natural setting.

Such programs may include:

- Lunch break dog walking/cat play session opportunities for downtown workers and residents;

- Social community programming such as “Walk a Hound, Lose a Pound” and “Yappy Hours”;
- Humane education for children - including field trips for schools and summer camps;
- Junior volunteer opportunities such as “Shelter Buddies Reading Program” (could also be utilized by less-mobile seniors);
- Supervised playgroups open to the public and their dogs (“Dogs Playing For Life”).

OK Humane Support for a Humane City

According to a 2016 Humane Society of the United States (HSUS) survey, there are an estimated 66.5 million households with pets nationally. This amounts to roughly 144.1 million dogs and cats serving as companion animals in these households. The prevalence of households with companion animals has grown steadily over the years with a changing perception of what it means to live with a companion animal. Of the households with pets, 63.2% indicated that they consider their animal to be a family member. Additionally, there has been a shift away from traditional pet “ownership” beliefs, where now only 1% of individuals with companion animals in their home consider them to be property. Despite this shift in perceptions regarding the role of companion animals in households, shelters have continued to see the issues of abuse, neglect, and companion animal homelessness persist.

In the same 2016 study, the HSUS found that 84.7% of dogs in households were adopted from a shelter or rescue. Given this data, innovative animal shelter programming such as that proposed by the Compassion Center can play an important role in achieving humane educational outcomes which diminish animal cruelty and other irresponsible companion animal practices. The literature indicates that the willful neglect of the relationships between humans and animals coincides with some of society’s biggest concerns, such as domestic violence, assault, and antisocial behaviors. It also suggests that confronting problematic thoughts and behavior around companion animals may have greater positive benefits for society as a whole (Colorado Link Project, 2016). Shelters that utilize humane education programming and hands-on interaction with companion animals can prompt patrons to explore our relationships with companion animals and the environment and bring to light the human contribution to animal cruelty and environmental degradation (Unti

and DeRes, 2003). By offering the opportunity to participate in pet care and pet ownership, while also educating the public on the nexus of human health and animal welfare, the Compassion Center will support the shift to a more humane Oklahoma City. This progressive approach to animal welfare may require a comprehensive review of city structures and institutions, with specific attention paid to the ways in which organizations and policies are either promoting or hindering efforts to promote the wellbeing of both human and animal residents of the city. The Compassion Center construction, in conjunction with the larger development of the urban amenity complex, can play an invaluable role in shifting the way human residents relate to animals as well as how the community relates to one another as a whole.

Oklahoma City Community Profile

Cultural Context

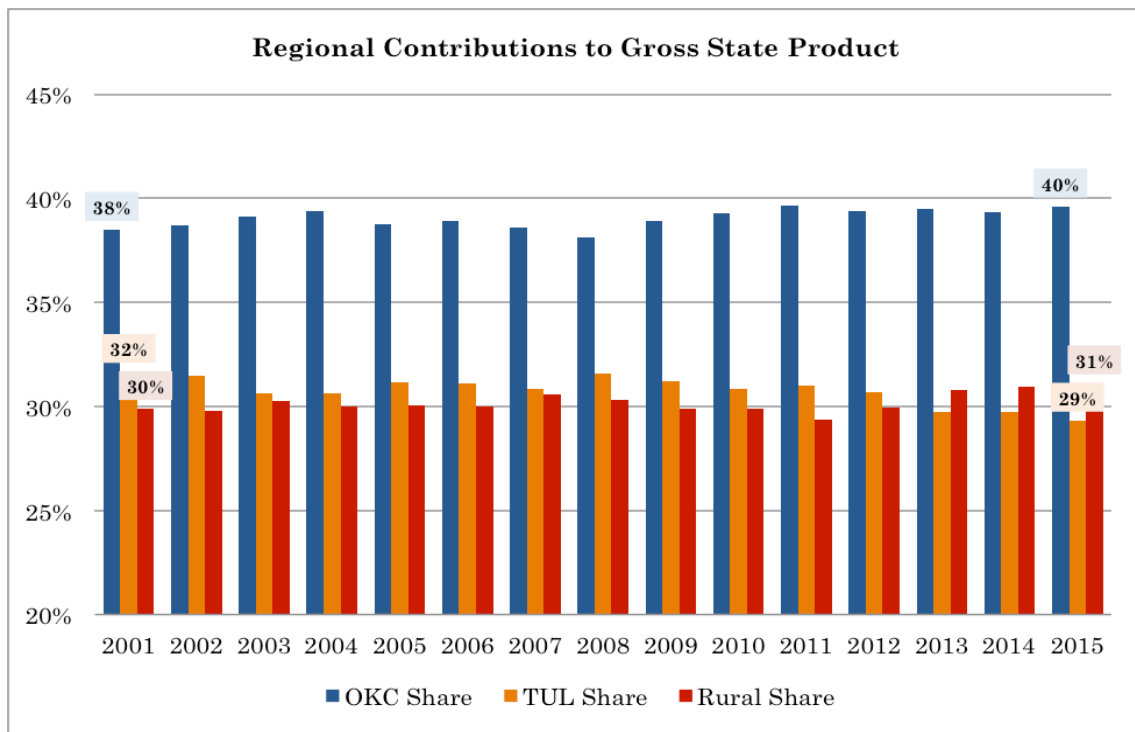
Oklahoma City is the urban center and capitol of the increasingly urbanized state of Oklahoma (RHH, 2016). The state economy has been historically rooted in oil production and agriculture, but declines in both industries have led residents to shift to alternative employment opportunities, leading to an increased rate of urbanization in the state's major cities. The latest census data depicts Oklahoma City as 62% white, with 17% identifying as Hispanic or Latino, 15.1% African American, 4% Asian, and 3.5% American Indian (USCB, 2016). Across Oklahoma City's demographics, optimizing public health, specifically around the issue of obesity, is a priority. Like many areas of the country, Oklahoma City struggles with obesity and its related health and economic ramifications. In 2007, the state of Oklahoma's adult obesity rate was reported as 33.9%, which is up from 20.1% in 2000 and from 10.3% in 1990 (TAH and RWJF, 2016). In late 2007, Mayor Mike Cornett initiated the "OKC Million" challenge, whereby the residents of Oklahoma City would collectively lose one million pounds, to ignite efforts towards addressing Oklahoma's obesity epidemic. This goal was achieved in January 2012, but public health improvement remains a central focus of the city.

Oklahoma City's population gains and economic strength are partially attributable to the intentional development of a compelling urban amenity complex. "Urban amenity complex" refers to the institutions and infrastructure that complement the lifestyle objectives of urban

residents. Broadly speaking, the amenity complex is a three-legged stool of education, recreation, and transportation. Urban areas that offer broad and diverse educational opportunities (both formal and informal), recreational opportunities including arts, athletics, gathering places, and outdoor recreation, as well as transportation support tend to attract and retain the talent best suited to developing an innovative and creative urban creative core. Civic attention has been directed towards reconstructing Oklahoma City’s downtown urban center to facilitate walkability and community-based health promotion (Leber, 2014). This urban amenity complex will further support health improvement initiatives that were activated by the OKC Million challenge and will serve as a guiding principle for the construction of the Compassion Center.

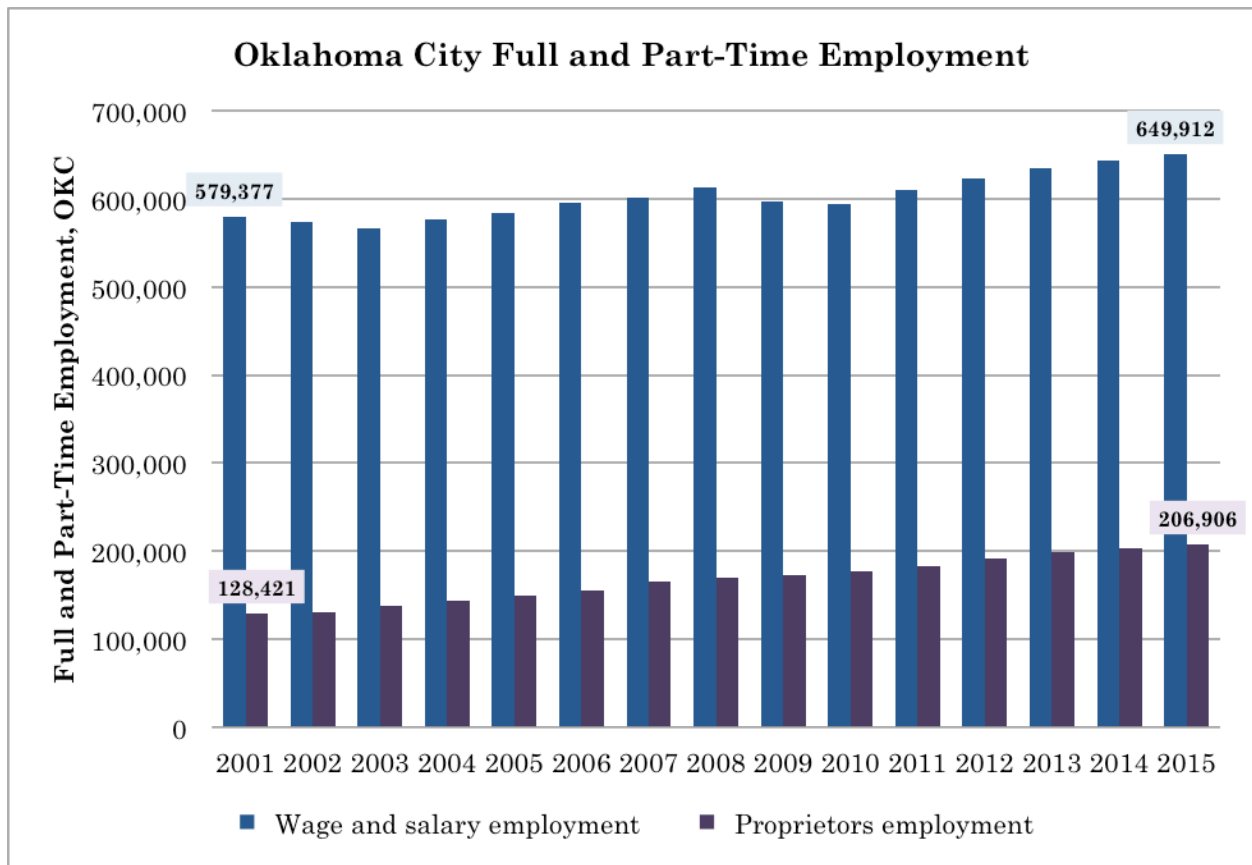
Economic Context

Oklahoma City continues to emerge as the state’s primary engine of economic growth, accounting for 40% of the state’s \$185 billion economy. Oklahoma City’s growing economic contributions are strongly correlated to underlying gains in population, income, and employment. As seen on the following chart, Oklahoma City greatly surpasses the regional contributions to gross state product of Tulsa, OK (TUL) and the collective rural communities.



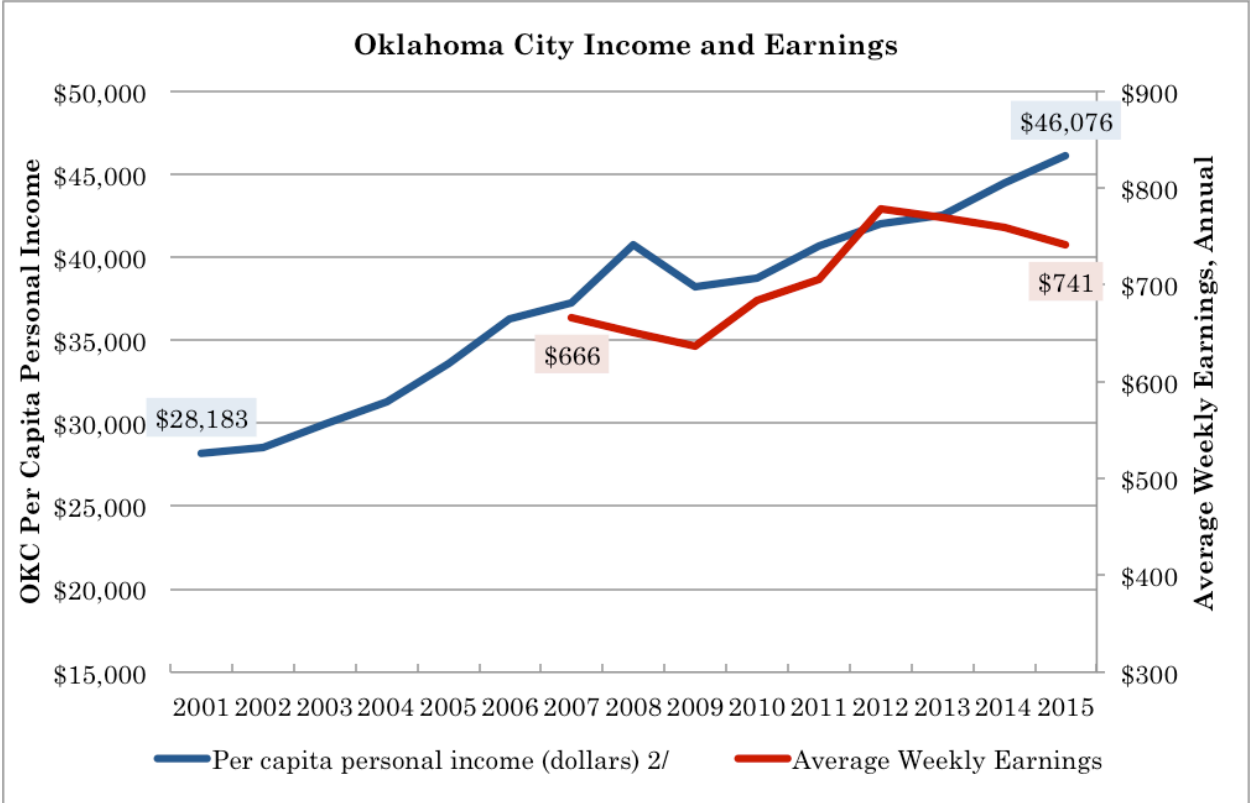
Source: Bureau of Economic Analysis; Calculations by Steven C. Agee Economic Research and Policy Institute

Oklahoma City full- and part-time employment has grown by 21% since 2001, averaging 1.4% growth annually reaching 856,818 by 2015, as denoted on the following chart from the Bureau of Economic Analysis. As home to the state capitol and administrative offices, as well as several major federal employers including Tinker Air Force Base and the Federal Aviation Administration’s Mike Monroney Aeronautical Center, the public sector accounts for 19% of Oklahoma City employment. Rounding out the top five employment sectors are health care services (12%), retail trade (12%), leisure services including food and accommodations (11%), and construction (7%). These top five labor-intensive sectors account for 61% of total employment.



Source: Bureau of Economic Analysis; Calculations by Steven C. Agee Economic Research and Policy Institute

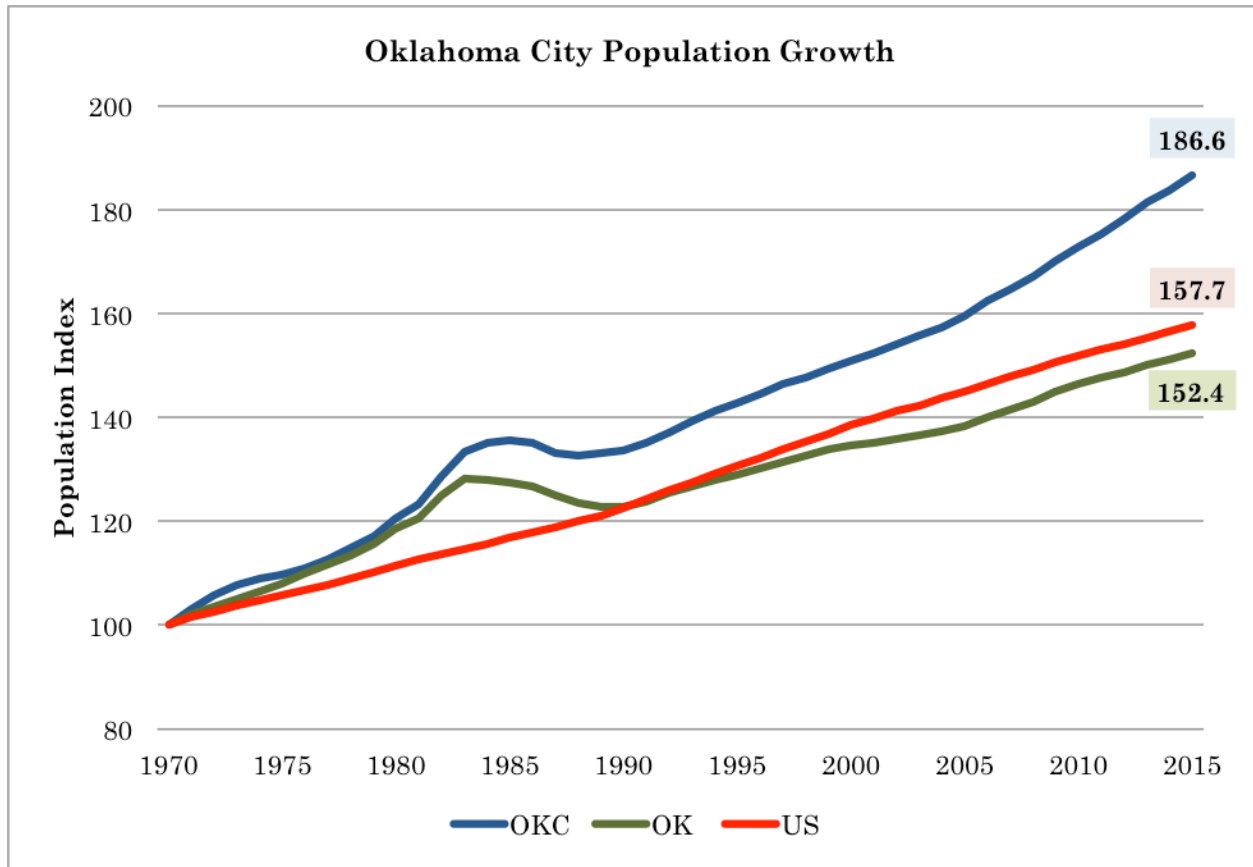
Oklahoma City per capita income reached \$46,076 in 2015, up 63% from the 2001 level of \$28,183, as reported by the Bureau of Economic Analysis and Labor Statistics in the chart below. As a share of U.S. per capita income, Oklahoma City income rose from 89% of the national per capita income to 96% as earnings grew faster in Oklahoma than average U.S. growth. Oklahoma City private sector average weekly earnings – a narrower definition of income that excludes rents, interest, and dividends – averaged \$741 in 2015, up 11% from 2007.



Source: Bureau of Economic Analysis; Bureau of Labor Statistics

Much of the economic success of Oklahoma City is explained by population gains. Labor-intensive economic activity, especially in the health care, retail, and hospitality sectors tends to follow population gains. Oklahoma City’s population expanded aggressively through the oil boom of the 1970’s and early 1980’s before contracting with the state’s population in the ensuing bust. Beginning in the early 1990’s, Oklahoma City’s population resumed a steady growth path while the state’s trend was much more modest. The state’s population growth rates consistently lagged national rates over the last 25 years while the metro area’s population growth rates

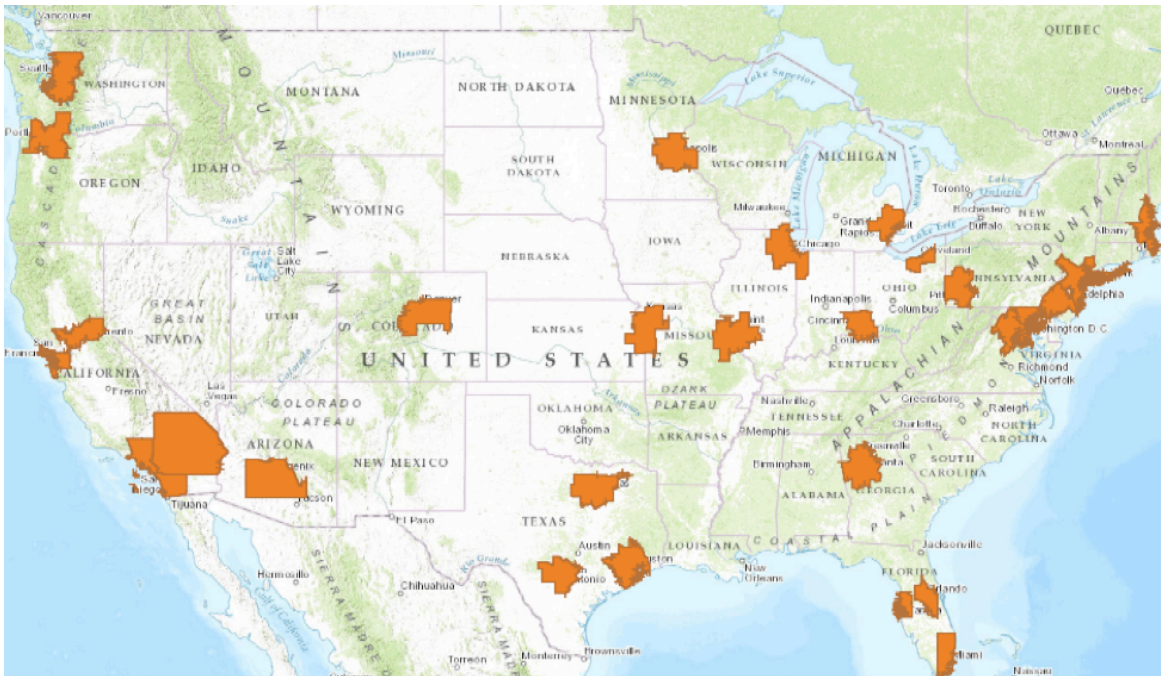
exceeded national rates over this period. The growth rate gap enjoyed by Oklahoma City has widened significantly over the last 10 years, evidenced in the Oklahoma City Population Growth chart here:



Source: Bureau of Economic Analysis; Calculations by Steven C. Agee Economic Research and Policy Institute

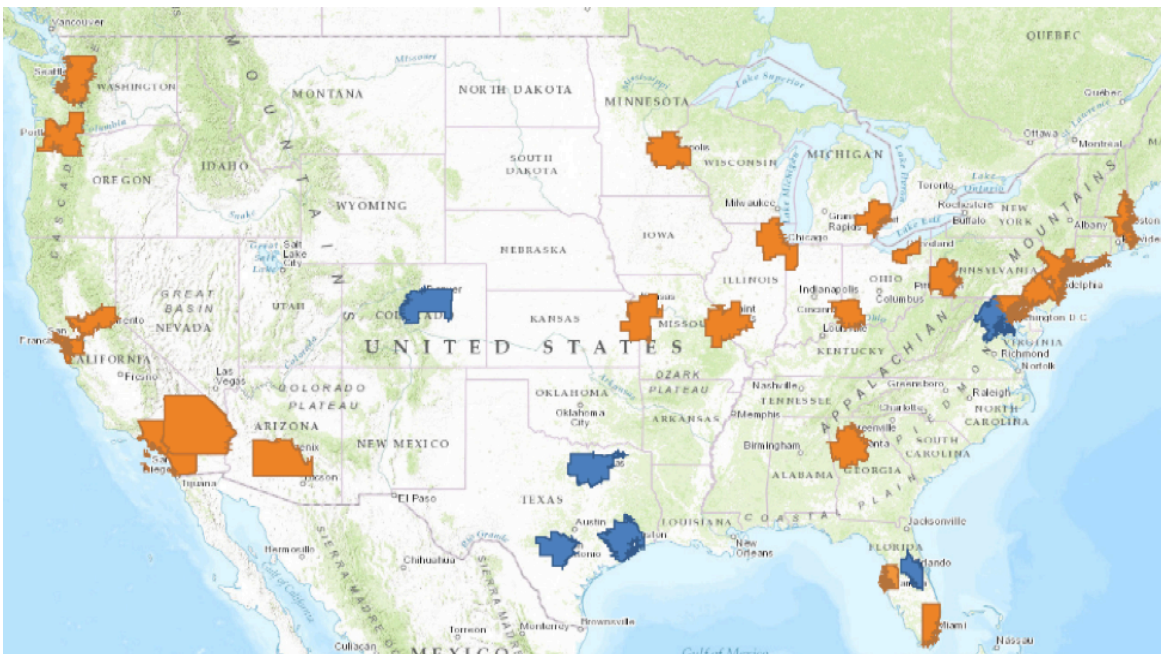
Oklahoma City’s population gains and economic strength are attributable to a combination of factors, led by its favorable geography and intentional development of a compelling urban amenity complex. The city’s location south and west and along the I-35 corridor places it in one of the fastest growing megalopolis regions of the country. Oklahoma City is also approaching a key population milestone of two million people. The map below highlights the nation’s large metropolitan areas and historic population centers in the northeast, upper Midwest, and west coast regions. Currently, 32 metropolitan areas in the United States have reached the two million persons mark¹.

¹ Since the map was created, Austin, Texas has also reached the two million person milestone.



Source: Map created by the Greater Oklahoma City Chamber of Commerce

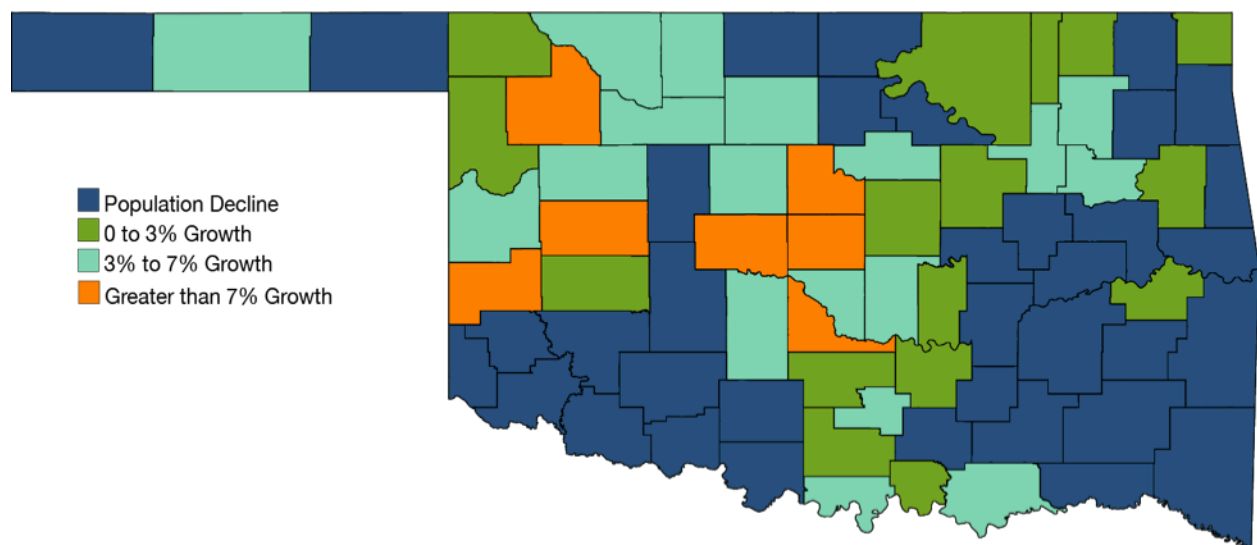
Population movements to the south and west have accelerated over the last generation leading to new fast growing population centers. The map below highlights in blue the large metropolitan areas experiencing population growth rates greater than Oklahoma City².



² This map also fails to recognize Austin, Texas as both recently reaching the two million person milestone and sustaining some of the fastest population growth rates in the nation.

Population centers growing faster than Oklahoma City are generally in the southern and western parts of the United States, headlined by the population growth of the I-35 corridor in Houston, San Antonio, Austin, and Dallas, Texas. Population strength continues to spill north along the corridor stretching into the Oklahoma City metropolitan area. Oklahoma City’s efforts to encourage density in the city’s core by developing a nationally recognized amenity complex serve to accelerate the geographically-induced growth.

The accompanying map of county-specific population changes from 2010 to 2015 highlight the economic forces behind movements in people and economic activity. All counties shaded dark blue experienced population declines over the first half of the decade. Dark green shaded counties experienced slow population growth. Light green shaded counties experienced significant population growth and are clustered around the Oklahoma/Texas I-35 border, the Oklahoma City core, the Tulsa MSA, and counties that enjoyed the fruits of the oil boom during this period. Orange shaded counties experienced transformative growth nearly twice (or more) the national average. Transformative growth is seen in the Oklahoma City core (a result of geography and amenity development) and in the heart of the oil production centers (a result of a specific industry strength). The population growth in Oklahoma City is supported by, but not dependent on, oil and gas strength, and is expected to continue growing in the years ahead.



The economic context described above offers a backdrop against which to consider the economic contribution of the proposed Compassion Center. The center would operate in the core of a fast-

growing but mid-level metropolitan area. In addition to its static economic impact, the center can serve as a complement to the downtown amenity complex, a signal of social awareness to a key labor demographic (the young, highly-educated, and innovative professional) and a catalyst for public health improvements. The economic significance of these impacts may well far exceed its operational impact over time.

The urban amenity complex development, paired with the construction of the Compassion Center, represents a significant opportunity to improve Oklahoma City's holistic wellness through a number of indicators. Of focus for this paper will be the economic, public health, and overall community wellness impacts of the new animal sheltering concept. In totality, the Compassion Center will serve to improve issues of human health through the associated social and economic benefits of increasing the number of adopted animals in a community.

OK Humane Compassion Center Economic Impact Analysis

Background

The current economic geography concentrates high-value economic activity in dense, amenity rich, creative centers³. Among the factors determining the location of economic activity, three are key: geography, amenities, and creativity. Controlling for other factors of economic growth, urban areas in the southern and western areas of the United States continue to outperform areas to the north and east. Population centers in Texas along the I-35 corridor trail only Florida and Arizona in terms of their twenty-year growth rates. Houston's sustained population growth rates exceed Chicago's to the point that Houston is on pace to become the nation's third largest in the next decade. While a portion of the growth is rightly attributable to strength in the oil and gas sector, much of the Texas economic and population growth is more appropriately attributable to forces that are purely geographical.

Controlling for other factors of economic growth, urban areas with a greater share of industry in a creativity cluster outperform less creatively endowed peers. Creativity clusters include

³ For a contrasting discussion on the flat world and the new economic geography, see *The World is Flat* by Thomas L. Friedman and *The New Geography of Jobs* by Enrico Moretti.

industries that are technologically rich, innovative, evolving and often include a Science, Technology, Engineering, and Mathematics (STEM) emphasis. In contrast, urban areas characterized by routine-driven occupations tend to experience slower productivity and wage growth (Martin et al., 2015). Fostering a climate of creativity, developing policies that promote a bridge from routine to creative occupations, or cultivating a creative extension of a routine occupation are increasingly important urban economic development strategies.

Controlling for other factors of economic growth, urban areas with a more developed amenity complex outperform amenity-poor peers. As touched on earlier, urban areas that offer broad and diverse educational opportunities, recreational opportunities, and transportation support tend to attract and retain the talent best-suited to developing a creative and innovative urban core.

The economic development implication of the preceding discussion is that not all economic activity is equal. New economic activity that encourages density, spurs creativity, or complements the amenity complex is of more value than economic activity that does not. The intent of this paper is to examine the potential economic contribution of the proposed OK Humane Compassion Center. When complete, the center will provide innovative animal care, community educational programs, and human-animal interactive public spaces while serving as a signal of social awareness to the creative talent pool feeding Oklahoma City's economic future.

Economic Impacts

Economic impact studies are designed to estimate the economic to a region from new activity. While these are not cost-benefit studies – as they do not explicitly estimate all of the costs or benefits of the new activity – they are an essential step in understanding the avenues by which local regions benefit from new economic activity. Economic impact models begin with a static delineation of payments between a regional economy's primary institutions (firms, households, and governments). The system of payments links the dollar output from a given industry (in our case, animal care facilities) to the dollar inputs required from supporting industries (e.g. wholesale purchases of supplies, veterinary equipment purchases, etc.) and the dollar inputs required from households (e.g. labor services in the form of veterinarians, administrative, and

support staff). In this way, every dollar of new output from an industry can be shown to require a given level of new support from related industries and regional households.

Economic impacts are estimated as responses to an external economic stimulus – or new economic activity. The change in final demand for regional production triggered by the stimulus is referred to as the *direct economic impact*. In order to accommodate the newly demanded output (e.g. animal adoption, welfare, and educational services), the producer in turn requires additional support from their suppliers, and in order for these suppliers to accommodate the new demand, they in turn increase purchases according to the relationships in the economic model from their supporting industries, and so on. The aggregate process of economic increase is referred to as the *indirect economic impacts* of the initial stimulus.

In addition to indirect economic impacts, an additional layer of economic impact is realized as workers from all levels of the process spend a portion of their additional labor income (and non-labor income). This household spending creates new demand (a second stimulus) from household supporting industries (e.g. health services, retail purchases, food services, etc.) that sets in motion successive economic activity as described previously. The aggregate process of economic activity from household spending is referred to as the *induced economic impacts* of the initial stimulus.

Economic impact models as described above, that estimate new economic activity based on current linkages between the inputs required from supporting industries and the output they support, are known as *Input-Output (IO) models*. IO models assume a fixed production relationship between outputs and inputs and sufficient slack in the affected markets as to leave prices fixed. The most common IO model application is IMPLAN, a data and modeling service commonly used in universities, governments, and economic development agencies to assess the economic impacts of new and existing industry activity⁴. The IMPLAN model application provides a baseline model of state and regional economies. Impacts can be estimated either within the software or in a custom spreadsheet application using multipliers derived within and

⁴ See www.implan.com/company for a complete company review and product description. Other sources of IO model derived multipliers include the Bureau of Economic Analysis RIMS II database found at www.bea.gov/regional/rims/rimsii/.

downloaded from the IMPLAN application. All impacts reported below are estimated within the IMPLAN software using a customized representation of the Oklahoma City economy.

The economic impact of the proposed Compassion Center occurs in two phases. First, the construction of the center exerts a one-time economic impact in the economy. Second, the operation of the center exerts a recurring impact in the economy.

The proposed Compassion Center is to be built on the southern edge of the MAPS 3 Downtown Public Park. The 70-acre park is funded through the third installment of the metropolitan area improvement program – “a capital improvements program in Oklahoma City that uses a one-cent, limited-term sales tax to pay for debt-free projects that improve our quality of life.”⁵ The park will include two sections connected by the 380-foot-long pedestrian Skydance Bridge which features a 197-foot-tall sculpture inspired by Oklahoma’s state bird, the scissor-tailed flycatcher. The north section will encompass 40 acres stretching from downtown’s core to Interstate 40 and the Skydance Bridge. The bridge will connect to the southern section of the park, creating access to an additional 30 acres. The proposed center would be built on property adjacent to the southern boundary of the park. In this location, the center would enjoy the ease of access for those coming from outside the city’s core, while maintaining direct connectivity to the core via the park. The adjacent, highly accessible public spaces would complement the center’s mission to encourage human-animal interactions in designated public gathering spaces.

When complete, it is anticipated that the Compassion Center would include 31,000 square feet of space dedicated to innovative delivery of animal welfare, educational, and community services. Approximately two-thirds of the space will be allocated to animal intake, holding, and adoption areas. The remaining space will be divided between clinical service areas, staff offices, educational delivery, and gathering spaces. The center will offer both dog and cat adoption areas with communal living and playrooms as well as dedicated space for training and behavior modification programs. The center will also include a specialized neonatal nursery capable of providing care for up to 2,000 puppies and kittens less than six weeks of age per year.

⁵ See <https://www.okc.gov/government/maps-3/about-maps-3> for an overview of the MAPS 3 program generally and <https://www.okc.gov/government/maps-3/projects/downtown-public-park> for a review of the downtown park specifically.

Construction of the center would involve expenditures of \$20 million, much of which would occur within the local economy. As explained previously, the initial expenditure will exert both indirect and induced effects as suppliers respond to this new demand and households spend a portion of newly generated income locally. The combined indirect and induced effects are reported below simply as the *multiplier effect*:

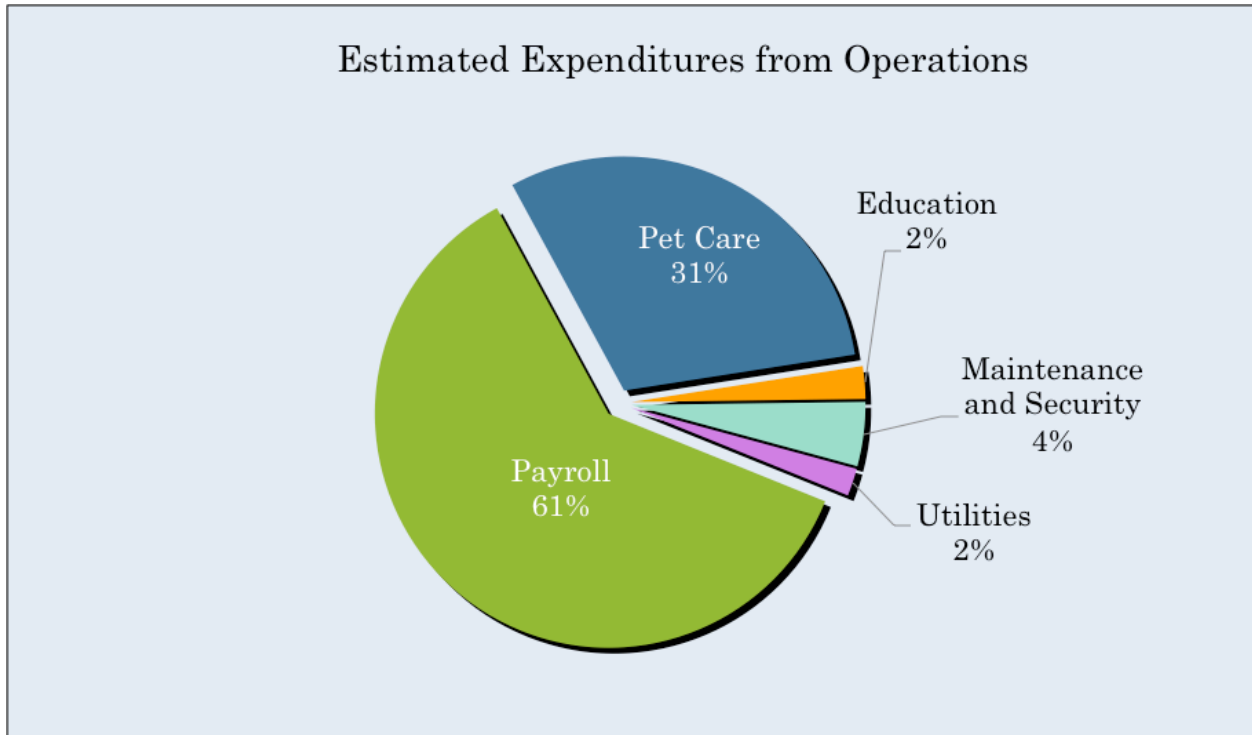
Economic Impacts from Construction

	Employment	Labor Income	Output
Direct Effect	141	\$ 7,824,617	\$ 20,000,001
Multiplier Effect	98	\$ 5,192,789	\$ 15,393,297
Total Impacts	239	\$ 13,017,406	\$ 35,393,297

Explained further, the construction phase of the project is anticipated to directly support 141 jobs (both full and part-time), while generating labor income gains of \$7.8 million (pay and benefits). The construction of the Compassion Center would rely heavily on local industries as the multiplier effect supports an additional 98 jobs and \$5.2 million in labor income. In total, the construction of the facility is anticipated to generate \$35.4 million in regional economic output while supporting 239 jobs and \$13 million in labor income. These are one-time impacts that will be experienced over time as the construction process occurs.

Compassion Center operations will be supported by an annual operating budget of \$4 to \$4.5 million. Operational expenditures will support medical and non-medical staff (approximately \$2.7 million annually), adoption center and program support (approximately \$1.35 million annually), and miscellaneous maintenance and repair expenses. At full operations, the center will serve as a source of best practice information for regional animal welfare organizations, a central location for innovative children’s and educational programs, and offer unique human-

animal interactive spaces for community events. The proximity to downtown will allow the operations to offer downtown activities, including a satellite adoption center.



Source: Central OK Humane Society

The annual operations will require recurring purchases from the local support economy. Purchases from supporting industries will trigger indirect and induced effects. The payments to staff will increase local household income triggering additional induced economic impacts. Just as the operational expenses will recur annually, so too will the economic impacts.

Economic impacts from operations occur in three distinct areas, as seen in the pie chart above. First, the staffing, payroll, and operations of the center represent new activity in the region. Second, the operations require purchases of materials and services from regional suppliers. Third, operations require labor services providing household income, a portion of which will be spent in the local economy offering additional economic impacts. The latter two avenues of impact will generate spillover, or multiplier effects.

The projected impacts from operations are presented below. Total impacts are the sum of the direct impacts from operations, impacts from regional purchases, and impacts from regional household spending:

Total Impacts from Operations			
	Employment	Labor Income	Output
Direct Effect	195	\$ 2,700,000	\$ 12,569,045
Multiplier Effect	29	\$ 1,359,443	\$ 4,112,116
Total Impacts	224	\$ 4,059,443	\$ 16,681,161

Economic Impacts from Operations Non Payroll Expenditures			
	Employment	Labor Income	Output
Direct Effect	8	\$ 341,388	\$ 1,074,528
Multiplier Effect	5	\$ 269,187	\$ 821,188
Total Impacts	13	\$ 610,575	\$ 1,895,715

Induced Impacts from Center Employee Income			
	Employment	Labor Income	Output
Direct Effect	-	\$ -	\$ -
Multiplier Effect	16	\$ 748,868	\$ 2,216,401
Total Impacts	16	\$ 748,868	\$ 2,216,401

Direct impacts are estimated from a reported annual payroll of \$2.7 million of which approximately \$600,000 is for veterinary professionals. Given the structure of the local economy, a \$2.7 million payroll is estimated to directly support 195 full and part-time jobs and almost \$12.6 million in regional production.

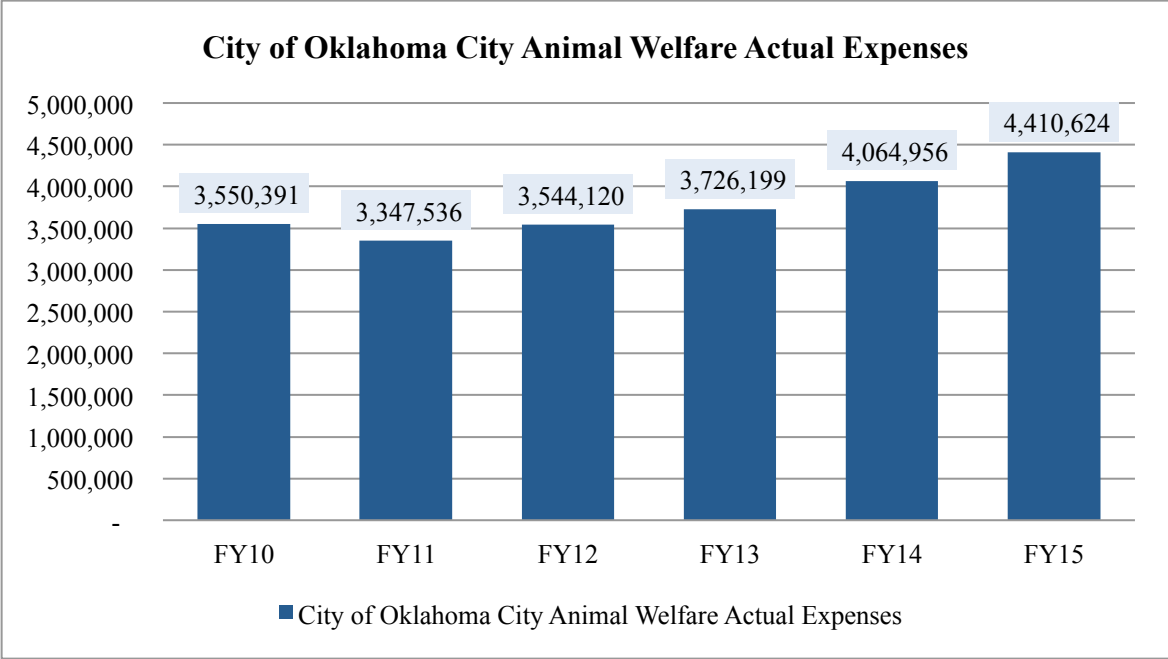
In addition to the \$2.7 million local payroll, center operations will require an additional \$1.7 million in non-payroll expenditures. Models of existing industry linkages in the Oklahoma City economy estimate that almost \$1.1 million of these “support” purchases will occur within the local economy. These local purchases are estimated to directly support 8 local jobs and \$341,388 in labor income while indirectly supporting an additional 5 jobs, \$269,187 in labor income, and \$821,188 in local production. Finally, center payroll expenditures induce increases in household spending sufficient to support 16 jobs, \$748,868 in labor income, and \$2.2 million in local production.

The spillover economic impacts from operational (non-payroll) and payroll expenditures combine to account for \$4.1 million in local economic production. The primary sectors benefiting from the economic activity supported by operational expenditures include power generation, medical manufacturing, real estate, wholesale trade, and building maintenance. The concentration of impacts in these industries is not a surprise given the requirements of the facility and the nature of providing clinic services.

The primary sectors benefitting from the payroll induced impacts are dwellings, hospitals, real estate, wholesale trade, and insurance carriers. Again, these sector impacts are consistent with the spending priorities of households. Payroll increases spur typical household spending on living, medical, and recreational activities. The full list of top industries impacted is reported in the accompanying table. In total, the impacts identified in the primary sectors account for 46% of the total \$4.1 million spillover activity.

Output Impacts - Primary Industry Impacts	
Sector Description	Output Impact - Nonpayroll Indirect
Electric power generation and transmission	195,550.1
Pharmaceutical, surgical, and medical manufacturing	155,056.7
Real estate	119,369.0
Wholesale trade	110,310.6
Services to buildings	102,487.8
Other educational services	96,563.6
Management of companies and enterprises	48,773.1
Owner-occupied dwellings	44,543.0
Facilities support services	44,108.2
Monetary authorities and depository credit intermediation	28,488.1
Sector Description	Output Impact - Payroll Induced
Owner-occupied dwellings	251,742.8
Hospitals	134,254.4
Real estate	116,331.1
Wholesale trade	109,114.1
Insurance carriers	79,203.9
Offices of physicians	69,450.8
Monetary authorities and depository credit intermediation	55,490.9
Other financial investment activities	51,046.5
Limited-service restaurants	46,820.0
Full-service restaurants	44,634.8
<i>Share of Indirect and Induced Impact from Primary Industries</i>	46%

An unexplored avenue of economic impact is the decreased burden placed on the city shelter from an active partnership with the new facility. As seen on the following graph, the City of Oklahoma City Animal Welfare expenses have risen from \$3.5 million in fiscal year 2010 to \$4.4 million in fiscal year 2015. In fiscal year 2015, the city shelter took in 23,185 dogs and cats for an average animal expense of \$190. The ability of the Compassion Center to ease the operational burdens of the shelter translate directly into cost savings for the city, allowing those funds to be allocated strategically to other areas of municipal operations.



In total, the operations of the Compassion Center are anticipated to initiate annually recurring economic impacts supporting 224 full and part-time jobs, \$4.1 million in local labor income, and \$16.7 million in local production. The impacts from operations complement the impacts from construction presented previously.

While significant, the direct economic impact of the construction and operation of the Compassion Center may appear to be relatively modest compared to other major economic development initiatives. However, the economic impact of the center can extend beyond simple changes in regional production to also complement the major public health initiatives and a core amenity complex that encourages density, creativity, and productivity. Given that scope, the true economic importance of the center has the potential to far exceed the above estimated economic impact.

OK Humane Compassion Center and the Urban Amenity Complex

Located just south of the central park and just east of the developing Wheeler District⁶, the Compassion Center will anchor the southern edge of the downtown core. Oklahoma City's "Core to Shore" plan (2008) articulates the urban amenity complex as a development project that "extends the activity and energy of a vital city center to the river; and the tranquility and open quality of the riverfront to downtown". This plan will follow five development principles designed to be a model for contemporary urban redevelopment:

1. **High Quality Design** - public and private environments will reflect the scale and detail of an urban community, provide cohesive variety, and utilize enduring, quality building, landscape, and streetscape materials;
2. **Pedestrian Scale** - the Core to Shore district will remain, above all, walkable and designed for the enjoyment and experience of people traveling without a motor vehicle. The environment will make pedestrian and bike transportation the naturally preferred modes of travel;
3. **Sustainability** - the physical structure of the district will minimize unnecessary driving and energy use, the building designs will conserve energy and minimize use of non-renewable resources, and major building projects will be LEED-certified;
4. **Compatibility** - development of both Downtown and the riverfront will fit together logically and organically;
5. **Diversity and Variety** - the district will provide a variety of housing, retail, recreational, and entertainment options, serving a wide range of preferences and incomes. Environment design will be similarly diverse and timeless.

This development initiative follows increased interest in the health and prosperity of the nearby river in the past two decades. Industrialized agriculture in the surrounding towns and urbanization within the city has greatly impacted the surrounding natural environment. In 2004, the North Canadian River was diverted and dammed to form the Oklahoma River in an effort to

⁶ See <http://newsok.com/article/5514114> for a recent article on the Wheeler District and proposed Tax Increment Finance district.

improve the water quality of the river. The result was a new water recreational space for Oklahoma City residents directly south of the city. However, increased demand for apartment units and other developments has restricted access to the river and river activities. The urban amenity complex would stretch from the downtown center to the Oklahoma River, generating a greater degree of accessibility to the water resource for downtown residents and workers.

The urban amenity complex development represents a significant investment in integrating the wellness enhancing qualities of the riverfront with the economic prosperity of the urban setting of Oklahoma City. These efforts are politically backed by the city's elected and appointed officials and are now being integrated into the agendas of local business owners and organizations. The OK Humane Compassion Center has the potential to be one such organization. The Center's intended location on the south side of the city's urban center would situate it in the nucleus of the urban green space, which is envisioned to be populated with intentionally selected businesses and organizations that will promote the healthy lifestyles kick-started by the OKC Million Pound challenge.

The urban amenity complex design is intended to enhance the walkability of the central urban corridor of OKC's downtown by integrating "green care" components of outdoor parks, water features, and eco-conscious structures. Such urban renewal projects can increase the property values of the surrounding neighborhoods and enhance public health of the residents of the city by enhancing the accessibility of green space and the riverfront area. Integrating the Compassion Center into the urban amenity complex would benefit public health by expanding opportunities for engagement such as increased physical exercise, improved feelings of connectedness with one's community, and an increased engagement with civic activities.

The urban amenity complex concept arises out of increasing understanding of the harmful effects of long-term exposure to traditional urban environments. As a result, there is a contemporary urban planning movement towards preserving green space, optimizing access to natural resources, and increasing the amount of time spent outdoors in nature. Studies have found:

- The absence of or restriction of access to green spaces or nature meant a diminished opportunity for individuals to recover from mental stress (Pretty et al., 2004);

- The components of the environment, such as the presence of nature or the physical features of the space have an impact on human behavior, interpersonal relationships and actual mental states (Tuan, 1977; Freeman, 1984; Kellert and Wilson, 1993; Tall, 1996; Frumkin, 2001);
- Studies show that being in nature can help restore attention and increase a sense of well-being (Zhang et al., 2014);
- Adopting physical activities whilst at the same time being directly exposed to nature has a variety of benefits (Hayashi et al., 1999);
- The cognitive functioning of children is improved when they are able to view green space from their home (Wells & Evans, 2003);
- Green spaces have important social implications like providing spaces for expression of both personal and cultural diversity (Thompson, 2002).

While the urban amenity complex is designed to facilitate human health, the Compassion Center represents an opportunity to integrate animal health into the project vision as well. Like many cities, Oklahoma City's animal welfare enforcement resources are limited, despite ongoing efforts to expand programs to improve the health and wellness of Oklahoma City's companion animal population. Oklahoma City's municipal facility handles dogs, cats, small mammals, livestock, and occasionally more exotic animals like reptiles or equines. The Compassion Center plans to take in over 7,000 animals from the municipal shelter annually, which would significantly reduce the existing burden on the municipal shelter and increase Oklahoma City's capacity to serve its homeless or neglected animal population. The Compassion Center's innovative programming will also offer new opportunities for Oklahoma City residents to engage with companion animals.

The Compassion Center will also offer a satellite adoption outreach center to further enhance the connection between the center and the downtown core. Over a lunch hour or before or after work, downtown workers, residents, and schoolchildren can interact with both the environment and companion animals available for adoption, receive training for personal companion animals, and/or participate in programs offered through their employer or school. This interaction will both benefit the adoptable companion animals (Bill Meade, whose architectural division of

Animal Care Equipment & Services in Crestline, CA, designs shelters across the United States states: “Every time we convince town officials to put a shelter in a good location, adoptions double”) and also offer a unique downtown amenity that will complement the current dining, recreation, arts, and outdoor spaces in the city’s amenity package.

Downtown Oklahoma City residents have been critical of the city’s pet-unfriendliness, specifically as it relates to the municipal code that prevents dog walking along the Bricktown Canal and a lack of dog parks and other pet-centric amenities. The Compassion Center would provide resources to enhance the community’s perception of the city’s overall pet friendliness in a welcoming atmosphere, which downtown residents desire and have come to expect from a major city. The center also has the potential to serve as a magnet drawing additional development to the southern edge and encouraging economic infill in the areas in between. In contributing to the densification of the city’s core, the Compassion Center can play a key role in contributing to the productivity gains that accompany density.

Attracting and retaining highly educated, innovative, and entrepreneurial millennials is an essential piece of current economic development strategy. Having the Compassion Center serve as an anchor of the urban amenity complex enhances the potential for it to function as an important signal to a highly mobile millennial population (Benetsky et al., 2015). The low cost of information sharing allows this demographic to readily form and communicate opinions of metro areas via social networks. This digital reality means that every local policy should be evaluated not just on its local impact, but also on the signal it sends beyond the community. The proposed center has the potential to send a positive signal both inside and outside the community that Oklahoma City promotes the benefits of human-animal-environmental interactions and values of animal welfare. This kind of brand equity alone for Oklahoma City could greatly increase even the projected economic impacts of the Compassion Center.

OK Humane Compassion Center and One Health Impacts

One Health is a concept, collaboratively proposed by the American Veterinary Medical Association and American Medical Association, which recognizes that the health of people is

connected to the health of animals and the environment. The goal of articulating the One Health paradigm is to encourage collaborative efforts of multiple disciplines - working locally, nationally, and globally - to achieve the best health for people, animals, and the environment, under the assumption that the health of each are deeply interconnected. The Compassion Center is uniquely positioned to exemplify the One Health concept by maximizing positive health benefits for both the humans and companion animals of Oklahoma City and drawing more individuals to the enhanced urban environment. The research and literature around the health benefits of animals in a community indicates that the presence of an animal in a household improves an individual's holistic wellness, including their physical, mental, and social health. These health benefits are a function of the activities inherent to living with companion animals such as increased physical activity, sensory stimulation through touching, and social interaction, but also the quality and consistency of the relationship that is required for the companion animal to be sufficiently cared for. The interconnected mechanisms of these health benefits for people, relevance to animal welfare, environmental stewardship and community development are outlined in more detail in the following sections.

Physical Health

In the United States, less than 50% of the population meets the physical activity guideline of 150 minutes per week (Christian et al., 2016). Physical inactivity results in the so-called “disuse syndrome” (i.e., premature aging, obesity, cardiovascular vulnerability, musculoskeletal fragility, and depression) (Bortz, 1984). Missouri, a state neighboring Oklahoma with similar demographics, estimated that obesity and overweight-attributable illness cost \$1.6 billion in medical expenditures between 1998 and 2000 (Finkelstein et al., 2005). One of the barriers to meeting the physical activity guideline may be a lack of pleasurable and accessible opportunities to walk.

The 2015 release of *Step It Up! The U.S. Surgeon General's Call to Action to Promote Walking and Walkable Communities* underscores the importance of increasing walking and walkability as a strategy not only to improve human physical health, but also to make communities safer, support social cohesion, reduce air pollution, and benefit local economies (USDHHS, 2015). Walkability (as defined by Walkscore™) is indicated to decrease property crime, murders, and

violent crime in areas where there was not a majority minority population (Gilderbloom, 2014). Regular physical activity is associated with numerous health benefits, including the prevention of many chronic diseases and conditions or a reduction in their adverse effects. Maintaining active lifestyles can help people stay at a healthy weight or lose weight. It can also lower the risk of heart disease, diabetes, stroke, high blood pressure, osteoporosis, and certain cancers, as well as reduce stress and boost mood. Therefore, the potential for physical activity at the Compassion Center through interaction with animals residing in the shelter and through utilization of the green space and walkable components of the urban amenity complex, has salient physical, mental, and community health implications.

The presence of companion animals in a community has a variety of other possible physical health benefits. Serpell (1991) indicated a causal relationship between acquiring a dog or cat and subsequent improvement in health and psychological well-being, with some of these effects lasting in the long-term (beyond one year). One study found that having a dog in the room lowered blood pressure more effectively than taking a popular type of blood pressure medication (ACE inhibitor) when under stress (Allen et al., 2001). Other research has indicated that the simple act of stroking an animal can help lower blood pressure and cholesterol (Hodgson et al., 2015). A 1980 study that was replicated in 1995 showed that even when controlling for the type of pet, the presence of any companion animal in the home following a major cardiovascular health event was associated with an enhanced prognosis for the patient, including their survival rate in the year following that event (Friedman et al., 1980, Friedman, 1995). The decrease in blood pressure as a result of contact comfort (Newton and Ehrlich, 1966), the unconditional positive regard (Fox, 1975), and the relaxation effect (Benson et al., 1978) of being in the presence of animals are all possible factors that result in an enhanced prognosis of cardiovascular patients. An assessment conducted by a panel of cardiologists convened by the American Heart Association concluded that pet ownership, particularly dog ownership, may be correlated to reduction in cardiovascular disease risk (Levine et al., 2013).

Further, researchers measured changes in heart rate and blood pressure among people who had a dog or cat, compared to those who did not, when participants were under stress (performing a timed math task), in a 2002 study. People with a dog or cat had lower resting heart rates and

blood pressure measures at the beginning of the experiment than non-pet owners. People with a dog or cat were also less likely to have spikes in heart rates and blood pressure while performing the math task, and their heart rates and blood pressure returned to normal more quickly. They also made fewer errors in their math when their companion animal was present in the room (Allen et al., 2002). All these findings indicated that having a dog or cat lowered the risk of heart disease, as well as lowering stress so that performance improved. Therefore, the Compassion Center's role in promoting adoption of companion animals and expanding the concept of responsible pet ownership indicates it could be source of decreased stress and increased life satisfaction for Oklahoma City residents.

The intrinsic support offered by companion animals may mirror human health benefits attributed to healthy human relationships (Collis and McNicholas, 1998). McNicholas et al. (2005) indicate that the degree to which physical health benefits are accrued as a result of companion animals may be mediated by variables such as personality, age, economic, or health status. The health benefits are a positive factor and people with companion animals choose to engage in these human-animal interactions as a result of the contributions the animal makes to their overall quality of life (Podbercek et al., 2000).

The positive impact on health also has fiscal impact for individuals and families. Headey (1999) found that dog and cat owners make fewer annual doctor visits, with a lower likelihood of needing medication for cardiovascular or sleep-related medical concerns. The survey concluded that pet ownership might be linked to an estimated savings of \$988 million in national health expenditures between 1994 and 1995. This is an extension of Siegel's (1990) findings that older people with companion animals made fewer doctor's visits as a result of decreased stress around adverse life events. Animals in a community and the activities inherent to their care provide structure that includes physical activity that could be vital to extending the quality of life for the aging adult population (Rakowski and Mor, 1992).

Comparative Programs & Physical Benefits

The following case examples indicate ways in which the Compassion Center programming may bring these physical health benefits to Oklahoma City residents via a proposed satellite adoption center located within the park area of the urban amenity complex and through volunteer work opportunities within the shelter's day-to-day operations.

Increasing Physical Activity through Volunteer Work: “Walk A Hound, Lose a Pound” Program (WAHLAP) Case Study

A study in 2006 indicated that increasing the number of animals in households may contribute to a physically active lifestyle and lead to a decrease in obesity in households that own a pet or have access to a companion animal (Ham and Epping, 2006). Intervention studies suggest that promoting dog-walking among people who do not routinely walk dogs may be an effective strategy for increasing and maintaining regular physical activity.

Intervention studies that focus on walking dogs and utilize a pre-post design show success in reducing participant weight and increasing physical activity. “Loaner” dog walking programs have been shown to be particularly effective at sustaining high adherence rates in targeted walking programs (Johnson and Meadows, 2010). In this way, the presence of an animal shelter that offers this access to dogs in need of walking at various points throughout the workday would greatly enhance the number of physical activity opportunities for the citizens of Oklahoma City.

The “Walk a Hound, Lose a Pound” (WAHLAP) program was the first of its kind to evaluate the benefits of walking shelter dogs for exercise. In one WAHLAP study, participants went from doing vigorous exercise less than three times per week or moderate exercise less than five times per week, to doing 30 minutes a day of moderate exercise five or more days per week. Seven percent of participants completed volunteer training at the animal shelter to be able to walk the dogs more frequently outside of the study and another seven percent of participants adopted dogs that they had walked. Another shelter dog walking study suggests that people who regularly walk dogs, even if they do not own the dog, significantly increase their own physical activity (Johnson, Beck, and McCune, 2011). Johnson and Meadows (2010) showed that overweight,

sedentary public housing residents had a 72% success rate in maintaining regular physical activity over 52 weeks when walking shelter dogs. These participants stated that their motivation for adherence was that “the dogs need us to walk them”.

Similarly, the Compassion Center would provide an additional opportunity to increase an individual’s physical activity by performing basic animal care duties, such as dog walking. An association appears to exist between community service/volunteer activities and levels of physical activity. Those who volunteered in environmental activities (e.g., those that require physical activity) were 2.6 times as likely to meet physical activity recommendations as those who did not volunteer for these activities (Librett et al., 2005).

The following shows a sample calculation of the potential weight loss incurred by volunteers at the Compassion Center, holding all else equal:

Variables	Quantity	Assumptions
Number of shelter dogs	250	
Number of volunteers	300	
% of volunteers walking dogs	80%	
Hours/volunteer/week	2	
Walk speed (MPH)	3	
Miles walked/week	4	Assumes 2/3 of each hour is spent walking. Other time spent on other activities such as returning dog to kennel, filling water bowl, etc.
Calories burned/mile	93	Assumes 180# person
Calories/pound	3,500	

Volunteer Outcomes	Quantity
Number of miles walked/year	49,920
Number of calories burned/year	4,642,560
Pounds lost/year	1,326
Pounds lost/volunteer/year	5.53

In this way, pet ownership is not a prerequisite to benefitting from the positive physical health benefits of the Compassion Center. As shown above, volunteering to walk dogs not only supports the Compassion Center’s animal care needs, but also contributes to volunteer weight loss. A 2010 survey conducted by UnitedHealthCare and VolunteerMatch indicated that additional benefits of volunteer work include:

- More than 68% of those who volunteered in the past year report that volunteering made them feel physically healthier;
- 29% of volunteers who suffer from a chronic condition say that volunteering has helped them manage their chronic illness;
- 89% of volunteers agree that volunteering improved their sense of well-being;
- 73% of volunteers feel that volunteering lowered their stress levels;
- 92% of volunteers agree that volunteering enriches their sense of purpose in life.

In terms of the animal health component of the One Health concept, the WAHLAP program also benefitted the participating homeless companion animals. During WAHLAP, the dogs had regular socialization with other dogs and with people of all ages. Shelter staff regularly commented that the shelter was a much quieter place and that the dogs “showed better” to potential adopters on Saturday afternoons after WAHLAP. This was an important outcome because the majority of potential adopters of shelter dogs typically go to the shelter on Saturday afternoon. In another study, the investigators tracked adoption and euthanasia rates in dogs participating in a graduated walking program with older adults and found that participating dogs were significantly more likely to be adopted and less likely to be euthanized than non-participating dogs (Johnson, McKenney, & McCune, 2010, unpublished). In this way, volunteer-led dog walking programs have the potential to greatly enhance the health of both human and animal participants.

Midday Exercise and Workplace Productivity

Regular opportunities for workers to experience human-animal interactions can serve as an important downtown amenity that can improve health and productivity. In this regard, the Compassion Center’s satellite adoption center may not only improve the health of Oklahoma City residents, but also contribute to the increased productivity of its downtown workforce. In one study, participants spent 30-60 minutes at lunch engaging in activities ranging from yoga to strength training to pick-up basketball. 60% of the workers reported that their time management skills, mental performance, and their ability to meet deadlines improved on days when they

exercised. The amount of the overall performance boost was about 15% according to the findings (Gilson, McKenna, and Cooke 2008). Additional considerations for midday exercise include:

- The energy boost from midday exercise can last for three to four hours;
- Socializing during exercise may provide a mood boost (Thøgersen-Ntoumani et al., 2015);
- Exercising in the presence of natural scenery (i.e. green exercise) has been demonstrated to enhance the self-esteem effect of regular exercise (Pretty et al., 2005).

One explanation for why even a short walk can have such a mood-elevating impact is that taking a walk may help people mentally recover during the day, replenishing depleted mental resources and helping cope with stress. Beyond the physical health benefits of dog walking and socializing with coworkers, regular animal interaction may increase empathy, resulting in a decreased incidence of animal abuse and possible transference to more pro-social interactions with the humans they encounter (Thompson and Gullone, 2003). The Compassion Center satellite adoption center could serve as a gathering space for friends and co-workers to exercise, take a mental break, and create a greater sense of community over their lunch hour while also supporting the animal care operations of the shelter. It is possible that these contributions to empathy, productivity, health, and community, while unmeasured in the current economic impact analysis, are of even greater economic significance than the local purchases associated with constructing and operating the Compassion Center.

Mental Health

The presence of animals in a community may have robust mental health implications for the human residents. In 1998, the American Veterinary Medical Association defined the human-animal bond as “a mutually beneficial and dynamic relationship between people and other animals that is influenced by behaviors that are essential to the health and well-being of both.” The primary benefit of the human-animal bond is the way in which it serves as a reliable and fulfilling relationship in an individual's life. The human-animal bond is comparable to the attachments human adults display. The attachment behaviors of a human-animal relationship

mirror adult attachment behaviors of proximity maintenance, separation distress, secure base, and safe havens (Crawford et al. 2006; Poresky et al. 1987; Topal et al. 1998; Walsh 2009). Because companion animals both give and receive affection, they can contribute to and partially fulfill attachment needs (Krause-Parello, 2008; Kurdek, 2009; Poresky et al., 1987; Walsh, 2009). It is widely believed by health professionals, clinicians, therapists, students, the general population, writers, and researchers that companion animals help to alleviate human loneliness. Gilbey, McNicholas, and Collis (2007) provided a more nuanced understanding of companion animals' impact on loneliness by positing that companion animals provide benefits that allow individuals to believe they are less lonely. Both of these findings are important because loneliness may be linked to an increase in human mortality at a rate comparable to that of smoking or obesity (Holt-lunstad, Smith and Layton 2010).

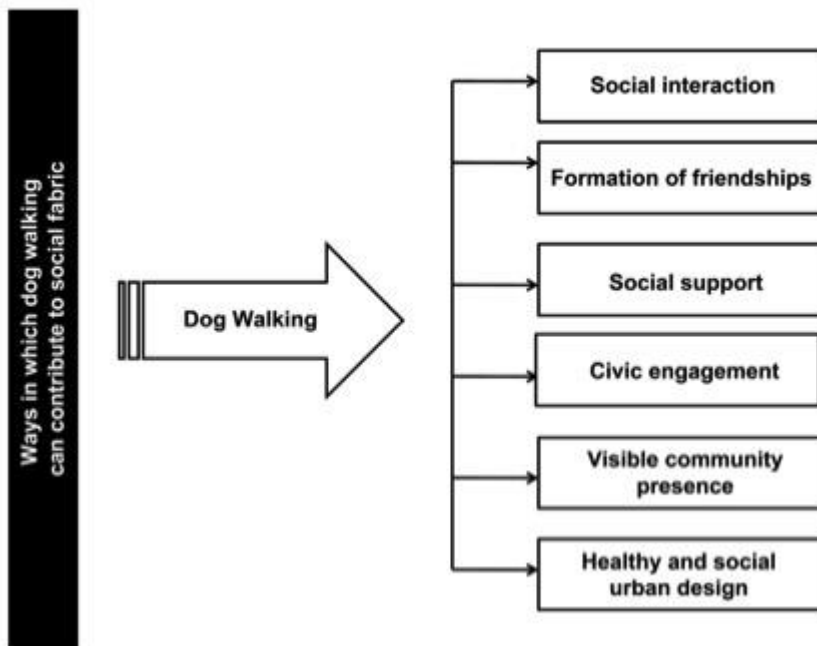
The stress relief that comes from the presence of a dog, coupled with the stress relief that comes from physical activity, such as dog-walking, equates to large potential for holistic health promotion in a population that either owns dogs or has access to interact with dogs. Having a companion animal, potentially by providing social support to the human, lowers blood pressure even when that individual is experiencing mental stress (Allen et al., 2001). Research has also shown that being around a dog can lower levels of the stress hormone cortisol and dampen other physiological stress responses. The effect is so strong that trained service dogs are being used to support war veterans in managing their experience with Post-Traumatic Stress Disorder (PTSD) (Polheber and Matchock, 2014). Companion animals have been found to influence the course and optimal functioning with pervasive developmental disabilities (Martin & Farnum, 2002) and mental health disorders including schizophrenia, depression, anxiety, and ADHD (Beck, 2005). For instance, those with schizophrenia exhibited less apathy, an enhanced quality of life, and increased motivation. In part, interactions with companion animals alter the tendency of those with mental health concerns to focus on negative thoughts. As a result, these individuals have a more beneficial involvement with their environment.

The Compassion Center programs will provide support for a myriad of mental health initiatives, not only by providing animals for adoption and therefore expanding the population of individuals with companion animals, but also by offering opportunities for those who do not live with

companion animals to interact with them in the gathering spaces of the Compassion Center. These contributions to individual physical and mental health of Oklahoma City residents generate larger community and public health benefits, including social capital, an important indicator of a healthy, civil society.

Social Capital

The increased presence of animals in a community has been connected to an overall increase in community cohesion (Wood and Giles-Corti, 2008). An emerging body of evidence is pointing to the ways in which companion animals can act as a social bridge between people and further contribute to tie communities together as a civil society. Social capital is a useful mechanism for capturing the more informal social transactions between individuals and organizations that may then amass to a larger economic benefit. Animal shelter-related activities such as dog walking generate social capital by serving as a social conduit for community members. There are six possible mechanisms through which dogs and dog walking can impact community health by influencing the social fabric of a community (Johnson et al., 2011). These six mechanisms are outlined on the diagram and text, below.



Social Interaction

Studies with experimental designs have compared social encounters experienced by people walking alone versus with a dog. They have found that walking with a dog is a frequent catalyst for social interaction and that those walking with a dog are far more likely to experience social contact and conversation with strangers, compared to solitary walkers (McNicholas and Collis, 2000). Dogs can normalize social interaction, provide a conversation starter or topic, and increase likelihood of perceived friendliness (Wood, 2010). Dogs often serve as a leveling agent, by transcending racial, cultural, geographic, age, and socioeconomic boundaries. This can play an important role in building trust and sense of community at the neighborhood level (Wood, 2010). Rossbach and Wilson (1989) found that being photographed with one's dog made one appear more likeable and therefore improved their social interactions.

Formation of Friendships

Abraham Maslow's "Hierarchy of Needs" hypothesized that after safety, the thing that people need most is "emotional belonging" (friendship, intimacy, trust and acceptance, receiving and giving affection and love, affiliating, being part of a group) (Maslow, 1943). To date, there is limited empirical research on friendships formed specifically through volunteer dog walking activities. However, the connection between volunteering, social psychological factors, and social networks has been captured by what has been termed "social integration theory," or "role theory," which holds that an individual's social connections, typically measured by the number of social roles that an individual has, can provide meaning and purpose to a person's life, while protecting them from isolation in difficult periods. The lack of social support rivals the negative health effects of well-established risk factors such as cigarette smoking, blood pressure, blood lipid concentrations, obesity, and lack of physical activity (House et al., 1988). Research also suggests that volunteering offers participants more than just a social network to provide support and alleviate stress; it also provides individuals with a sense of purpose and life satisfaction (Grimm, Jr, R, Spring, K, and Dietz, N., 2007).

Social Support

Social support is one of ten key social determinants of health identified by the World Health Organization. While the research has yet to study the social support derived from people meeting

through dog walking, there is a growing body of evidence linking both mental and physical health and well-being to social connectedness, social networks, and social support. Conversely, social isolation and loneliness can negatively affect health and are risk factors for poor mental health. Social isolation and a lack of social support have also been linked to increased risk of cardiovascular heart disease, independent of other more established risk factors such as smoking and hypertension (Bunker et al., 2003). Heady (1999) concluded that dogs as companion animals can substitute for deficiencies in the human network of the non-partnered.

Several studies have examined the extent to which associations between volunteering and subjective well-being (SWB) could be related to volunteers having more supportive social networks relative to non-volunteers. The results indicated that the higher life satisfaction and positive affect reported by those who volunteer at moderate levels (up to 7 hours per week) are related to their higher levels of positive social exchanges and greater availability of social support from friends and family, relative to non-volunteers. Those who volunteer at higher levels (7 hours or more per week) also reported greater levels of positive affect in comparison to non-volunteers, and this was related to their greater availability of social support from friends (Pilkington, Windsor, Crisp, 2012). The Compassion Center represents a significant opportunity for isolated individuals to receive social support either informally through interactions with others and their animals or more formally through volunteer opportunities.

Civic Engagement

Civic engagement is one of the markers of a civil society and relates to the capacity of individuals to be concerned and active within the community. This in turn creates the “social capital” from which others can benefit (Johnson, Beck, and McCune, 2011). In one study, survey respondents were asked whether they had taken action on a local issue such as attending a local action meeting, writing to a newspaper or politician about a local issue, or signing a petition. Pet owners were 57% more likely to be engaged than non-pet owners on this civic engagement scale (Wood et al., 2005).

Many of the issues that provoke the concern and interest of dog owners have the potential to benefit the community more broadly. Dog walkers have a vested interest in the availability and maintenance of local parks and open space, adding their “voice” to the broader imperative for

access to parks, open space, and opportunities to come into contact with nature. A high proportion of program participants in a Western Australia's "Adopt-A-Park" program have a dog and attend parks regularly with their dog. Activities undertaken by "Adopt-A-Park" supporters, including those with companion animals, include picking up litter, removing or reporting graffiti or damaged equipment, and providing a positive presence in parks (City of Stirling, 2009). In this way, the civic engagement of individuals with companion animals can play an important role in advocating for the maintenance of structures that will achieve the overall walkability of Oklahoma City's urban amenity complex.

Visible Community Presence

The visible presence of people can enhance both the actual and perceived safety of a community as embodied in the notion of "eyes on the street." Woods and Giles (2008) found that the more people "out walking", the safer the neighborhood is for those who walk. In one social capital study, the visible presence of people "out and about," including dog walking, emerged as a positive marker of community safety, while deserted streets and parks conveyed negative impressions about safety, crime, and general sense of community (Wood et al., 2007). A spillover effect is present, with community "out and aboutness" and its influence on perceptions of safety benefitting both those with and without dog. It is plausible that the visible presence of dogs being walked, the accompanying social exchanges, and the impetus dogs provide for people to be out walking in the streets and parks, all contribute to increased feelings of collective safety and perceptions of sense of community (Wood et al., 2005).

Conversely, seeing few or no people fuels concerns about the safety of the neighborhood and may further deter social interaction with community members and the opportunity to strengthen community ties (Jacobs, 1961). A fear of crime and not feeling safe can sometimes be as detrimental in a community as actual crime; if people are fearful they may be less likely to go out of their home or use local facilities, be reluctant to walk to destinations, or hesitant to interact with strangers or people they meet in the street, particularly at night.

Healthy and Social Urban Design

There is growing recognition of the role of the intentionally-designed urban environment in health and social well-being. People who walk with dogs are attracted to attributes of neighborhoods that are equally valued by everyone, such as walkable streets and parks that are attractive, well lit, and safe. General features of the physical environment that support physical activity and walking in the population (such as park attractiveness, size, accessibility, and safety) are also important for dog walkers (Cutt, 2007). In *The Great Neighborhood Book*, Walljasper writes, “When you create a neighborhood that’s friendly to dogs, it’s friendly to people, too. The traffic is not speeding and dangerous. There are green places to hang out and walk. So dogs are a good indicator species” (Walljasper 2007).

Conclusion

OK Humane’s proposed Compassion Center will serve as a resource for both the companion animal and human residents of Oklahoma City through traditional shelter functions, as well as innovative community programming. The center has the potential to drive significant economic, health, and social capital benefits by supporting urban revitalization and the overall health and wellness of the human population through the expansion of pet ownership. From a directly calculable perspective, based on current center plans and available economic models, the Compassion Center could create upwards of \$118,000,000 in direct, indirect, and induced economic effects over five years.

Beyond the calculated economic impact, the Compassion Center will anchor the new urban amenity complex. This location may serve to draw additional development to the area as well as facilitate human-animal interaction for downtown workers and residents. Furthermore, it is a signal to the Oklahoma City community, as well as people and business considering a move to Oklahoma City, that the community values companion animals and the benefits that come from having them as an integral part of the community.

By providing the opportunity for increased human-animal interaction, the Compassion Center may help Oklahoma City achieve the benefits that come from incorporating companion animals in a community. Research indicates that companion animals can improve an individual’s holistic

wellness, including their physical, mental, and social health. The physical health benefits that come from interaction with companion animals include, but are not limited to, increased physical activity, decreased obesity, and improved cardiovascular performance. The presence of companion animals in a community may also have robust mental health implications for the human residents. The human-animal bond can alleviate loneliness, depression, and stress, all of which have the potential to increase human morbidity on the same scale as physical factors such as smoking and obesity. Finally, the increased presence of animals in a community has also been connected to an overall increase in community cohesion. Companion animals act as a social conduit, encouraging social interaction and connectedness. They can also inspire higher levels of civic engagement and contribute to the feelings of safety in a community. Beyond the obvious benefits that come with better wellness, community health improvement often results in lower health care costs for that community.

The Compassion Center will be unique space in Oklahoma City that, through animal intake, adoption, and community programming, will come into contact with the wide variety of human strengths and challenges. The center will utilize both established best practices in animal care as well as humane community education to support the human residents and generate comprehensive and holistic social change. In this way, the Compassion Center will serve as an important resource for Oklahoma City to help better understand and refine its relationship with companion animals.

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