

# The Impact of Housing Quality on Children's Health

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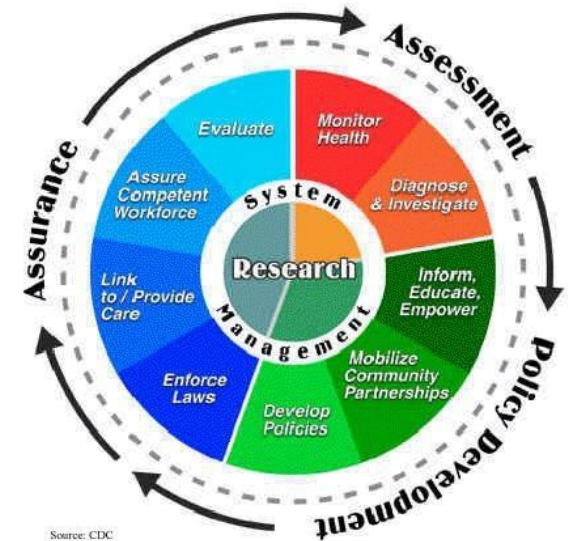
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# Philadelphia Department of Public Health

- **Mission:** to protect and promote the health of all Philadelphians and to provide a safety net for the most vulnerable.


**V**ision is of a city in which every resident is able to:

- Live a long, healthy, and productive life;
- Be free of preventable disease and disability; and
- Live, work, learn, shop, and play in environments that promote health.





# Goals for Children's Housing

- Keep families in their homes
  - Reduce the risk of homelessness
- Housing Costs Affordable
  - Reduce share of income needed for housing
- Increase housing stability
  - Reduce stress and harm from frequent moves
-  Improve Housing Quality
  - Reduce health and safety hazards; increase housing security



# The Impact of Poor Housing Quality on Children: Asthma, Lead Poisoning, Injury

- Development and worsening **asthma** has been tied specific housing conditions
  - Pests (cockroaches and mice)
  - Molds/Chronic Dampness
  - Tobacco smoke
- **Lead exposure** tied to long term effects
  - CDC recently lowered the “action level” to 5 ug/dl
- **Injury** from unsafe housing conditions
  - Lack of Smoke Alarm
  - Broken windows, stairs, railings



# The Impact of Poor Housing Quality on Children: Emotional Harm

- **Emotional and behavioral problems such as anxiety and depression because of the**
  - increased stress on parents,
  - increased parental mental health problems, and
  - limits on parent's ability to provide supporting stimulating family activities;
- **Poorer school performance** for older children, with adolescents with lower reading and math skills in standardized achievement tests.

# Poor Housing Quality is a Serious Threat to Children's Health

- Of five housing characteristics studied
  - Quality
  - Stability
  - Affordability
  - Ownership
  - Receiving A Housing Subsidy

**Poor housing quality** is the most consistent and strongest predictor of emotional and behavioral problems in low-income children and youth among the 5 factors studied

**Housing Instability** is a close second.



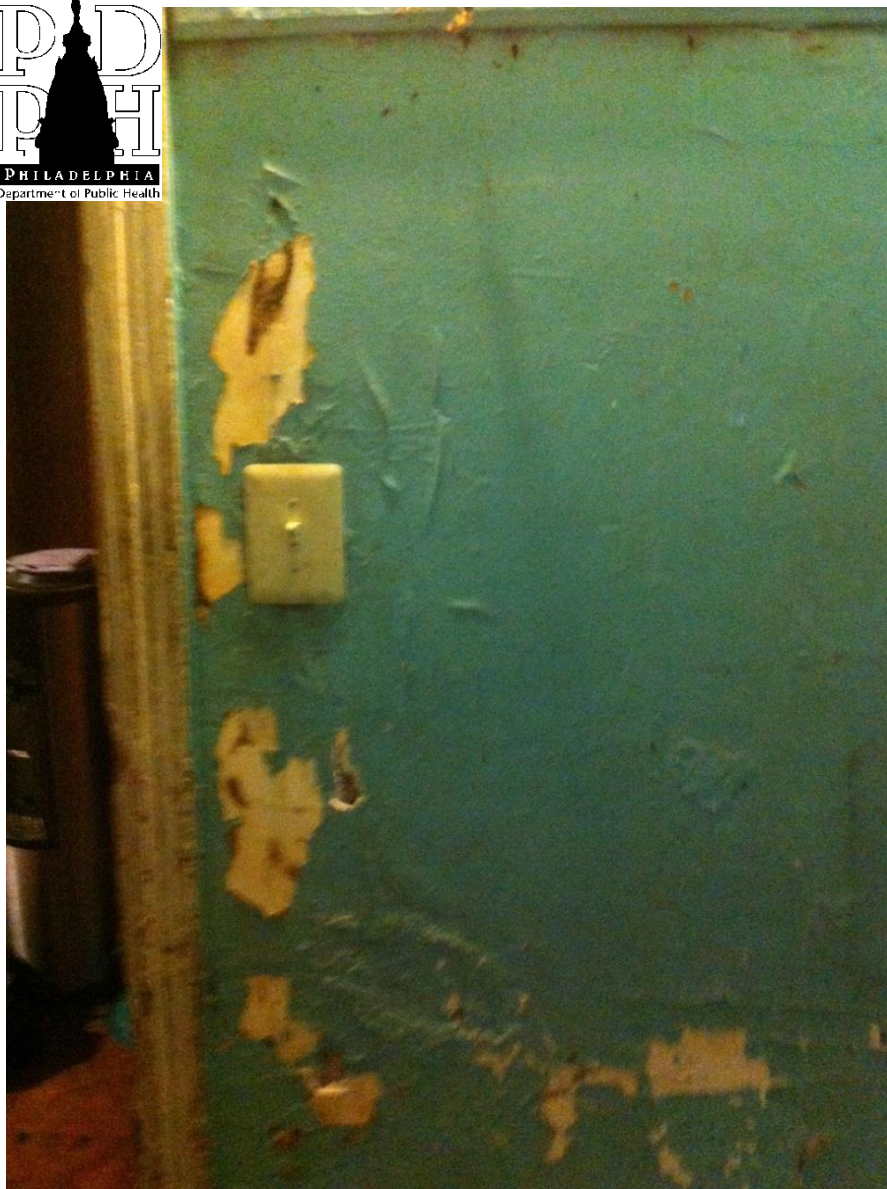


**Rental unit of a child with asthma in the PDPH  
*Healthy Homes Health Kids* Program**



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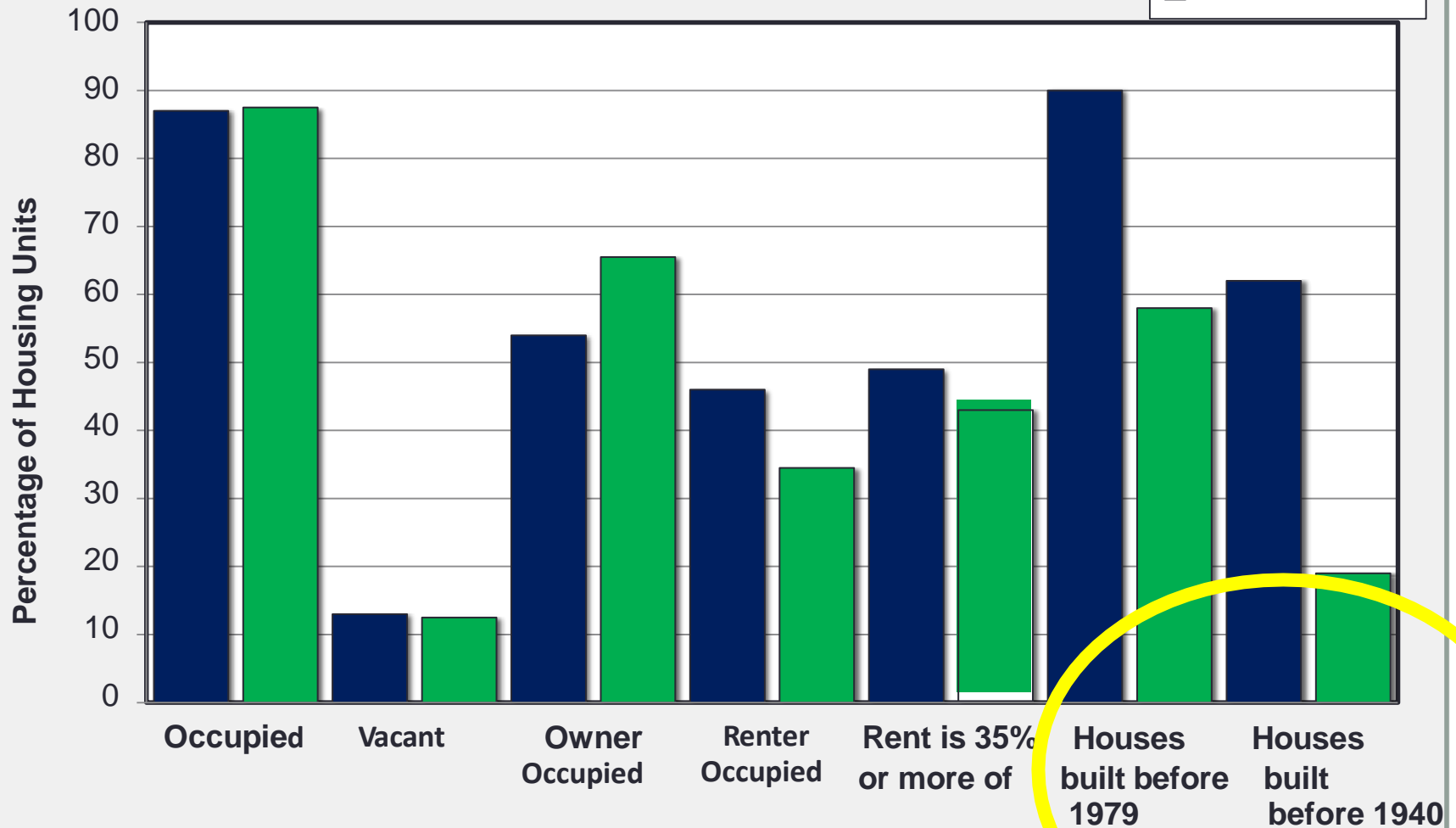
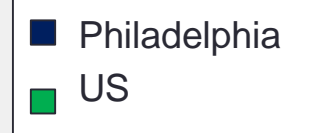
**Rental units of children with asthma in the PDPH  
*Healthy Homes Health Kids* Program**





Vacant property adjoining owner-occupied property

## Housing Characteristics Philadelphia, PA and US (2008-2012)





# Conditions of Housing Philadelphia & US

Condition	% Philadelphia	% National
Rodents in home in past 3 months	23	6
Leak(s) inside home	11	8
Open cracks or holes inside homes	10	5
Moderate or severe physical problems with home	8	5
Lacking a working smoke detector	5	6
Hole in Roof	5	1
Broken plaster or peeling paint inside home	5	2
Broken windows	3	3
Holes in floors	3	1
Rooms without electric outlets	3	1
Overall rating of structure is poor	3	1
Foundation crumbling, cracks or holes	1	2

American Housing Survey (2009)



Uncomfortably cold for 24 hrs. more

Rodents in home in past 3 mo.

Leak

Open cracks/holes inside home

Lacking some or all plumbing

Moderate or severe physical

Broken windows

No working toilets in last 3 months

Lacking a working smoke detector

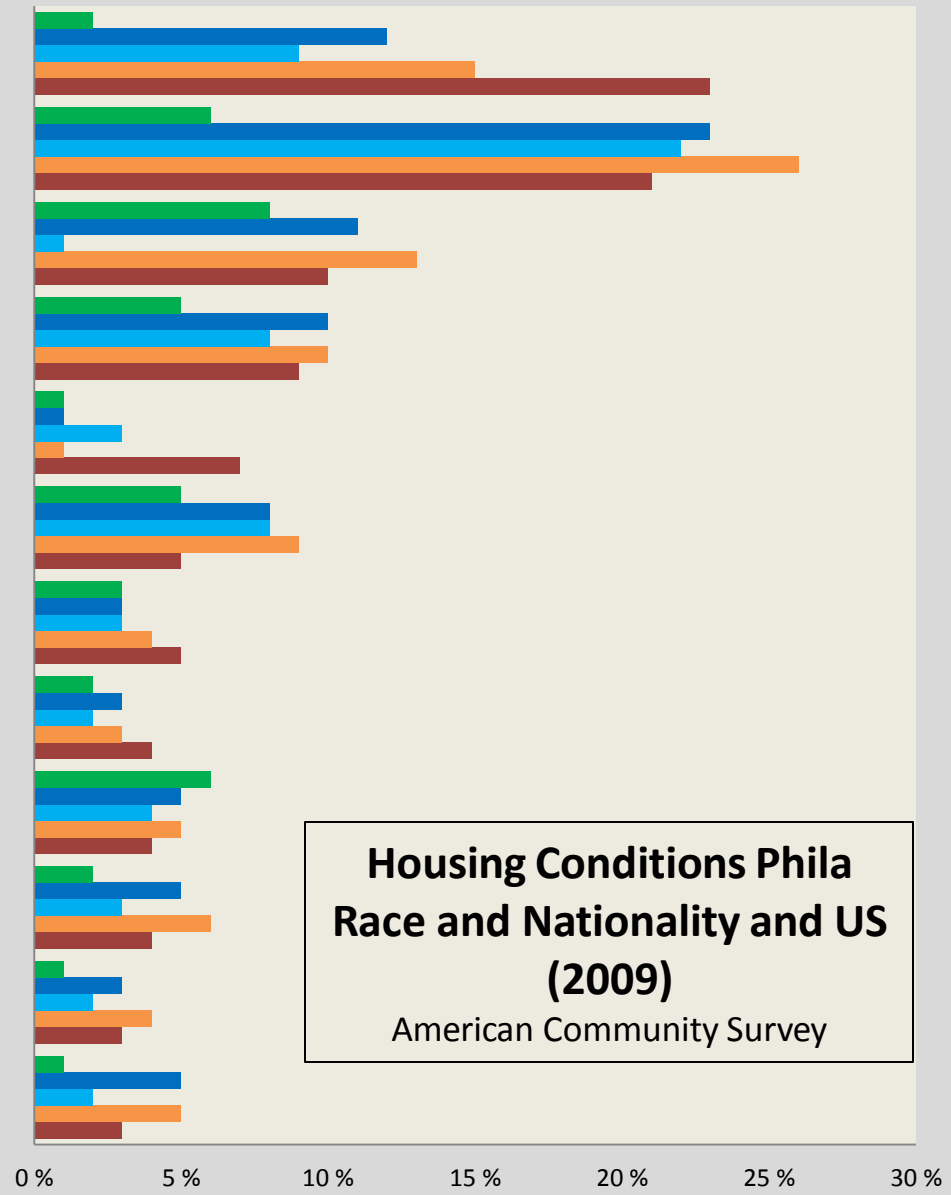
Broken plaster or peeling paint inside home

Holes in floors

Hole in Roof

**Housing Conditions Phila**  
**Race and Nationality and US**  
**(2009)**  
American Community Survey

■ US ■ All Phila ■ Phila Latino ■ Phila African American ■ Phila Below Poverty





# POVERTY IN PHILADELPHIA

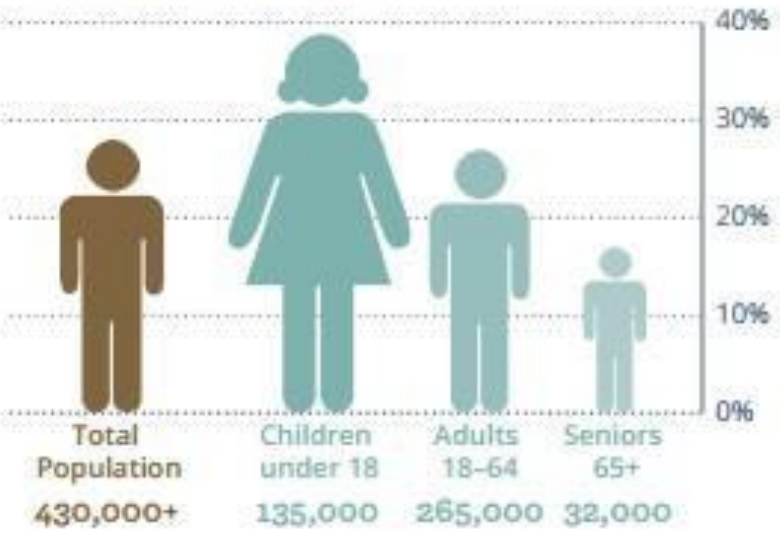
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# Poverty and Median Income in Philadelphia

NEARLY 1 OUT OF EVERY 2.5 CHILDREN LIVES BELOW THE FEDERAL POVERTY LINE.

Poverty by Age Group

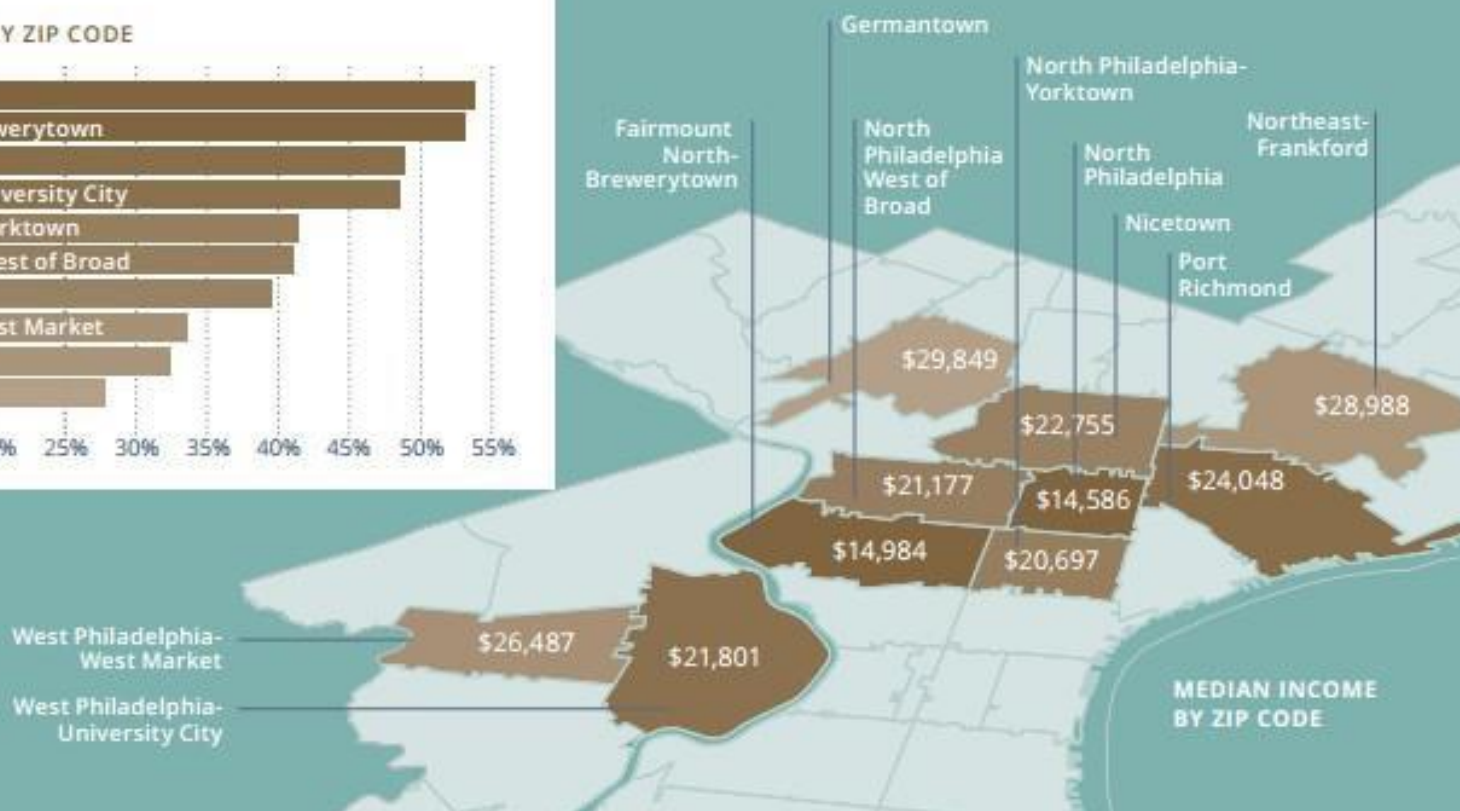


# What Does the Poverty Rate Mean?

2014 POVERTY GUIDELINES FOR THE 48 CONTIGUOUS STATES AND THE DISTRICT OF COLUMBIA	
Persons in family/household	Poverty guideline
1	\$11,670
2	15,730
3	19,790
4	23,850
5	27,910
6	31,970
7	36,030
8	40,090

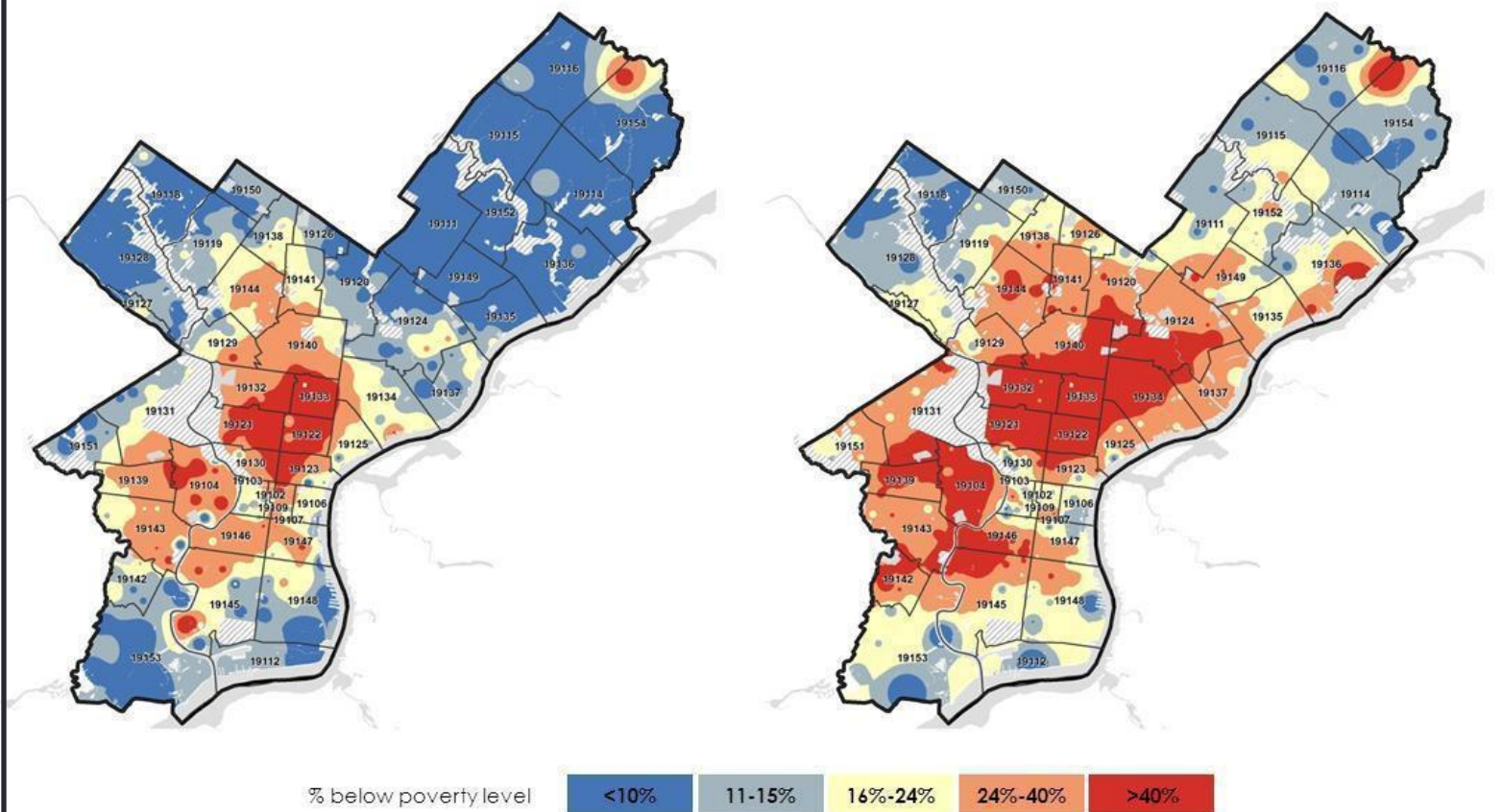
IN 24 OF THE CITY'S 46 RESIDENTIAL ZIP CODES, THE POVERTY RATE IS OVER 20%.
   
 CONCENTRATIONS ARE GREATEST IN NORTH AND WEST PHILADELPHIA.

% LIVING IN POVERTY BY ZIP CODE



# Philadelphia Poverty Rate 1980 and 2010

PERCENT OF POPULATION LIVING BELOW POVERTY  
[RATIO TO POVERTY LEVEL]

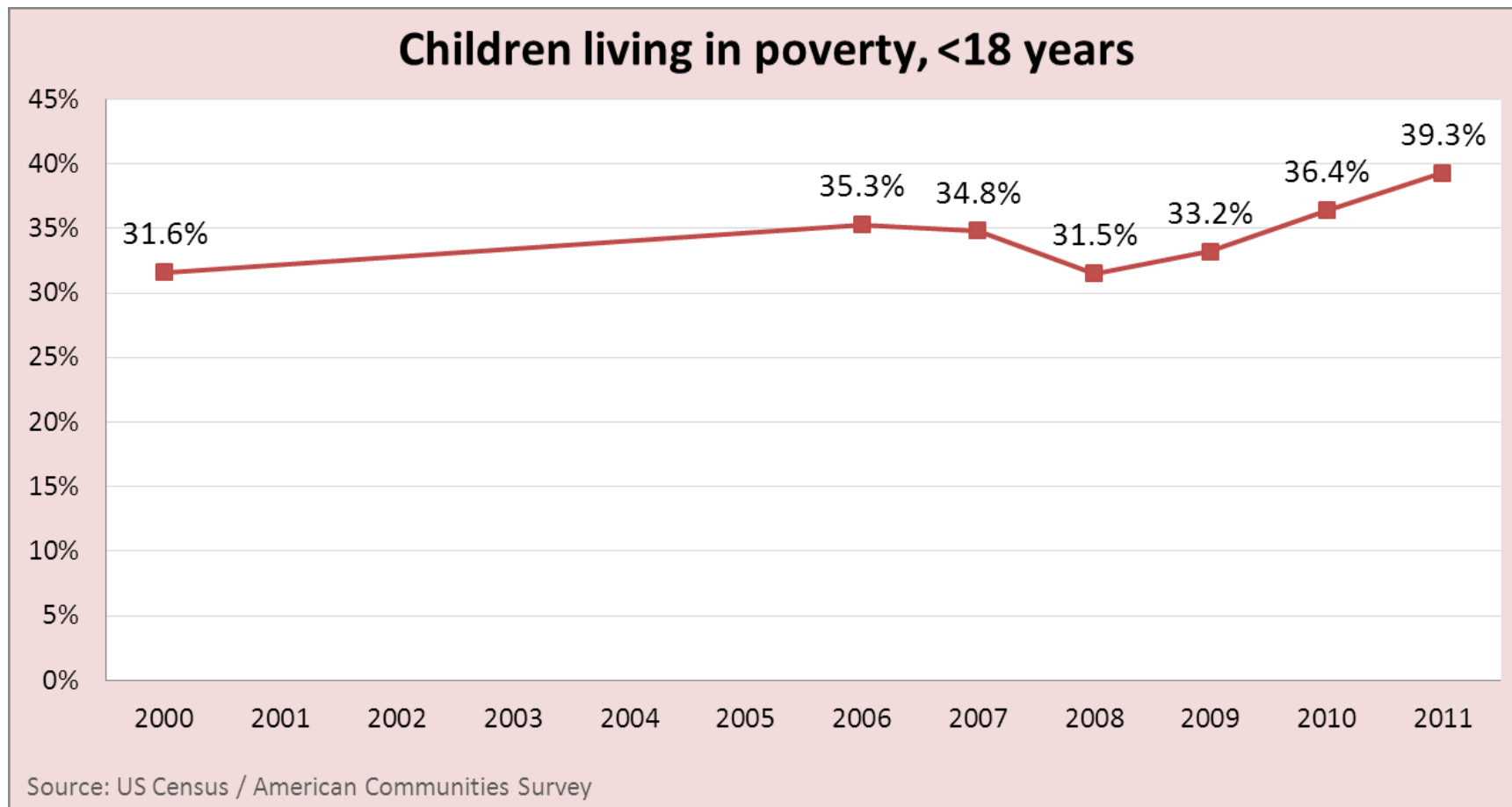


Data Sources:

1980 Ratio to Poverty, 1980 Decennial Census, SF3 P88 from National Historical Geographic Information System.  
2010 Ratio to Poverty, American Community Survey, 2006-2010 5yr Estimate, C17002.

# Children Living in Poverty

## Philadelphia (2000-2011)





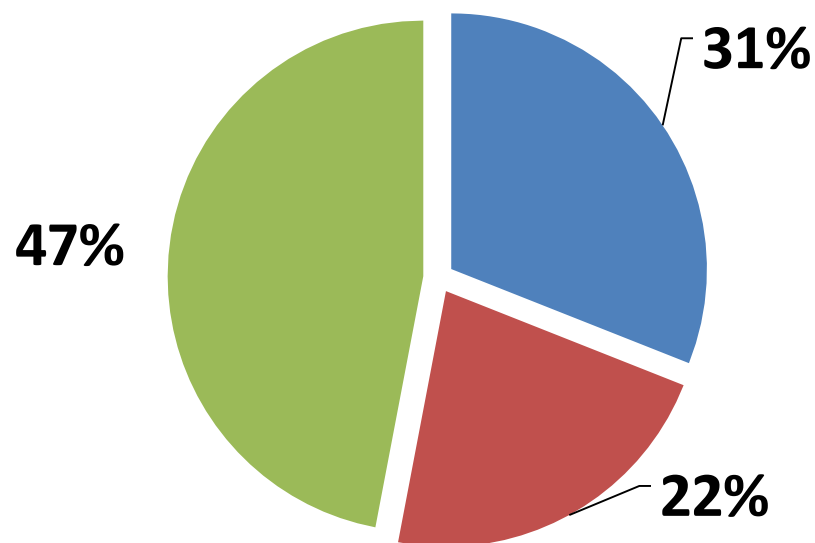


# THE COST OF HOUSING IN PHILADELPHIA

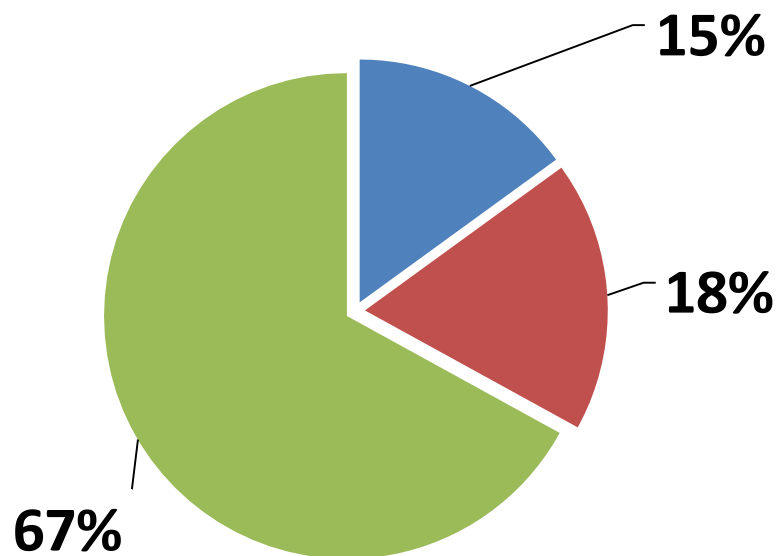
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# Housing Cost Burden Philadelphia(2010)

## Renters



## Homeowners

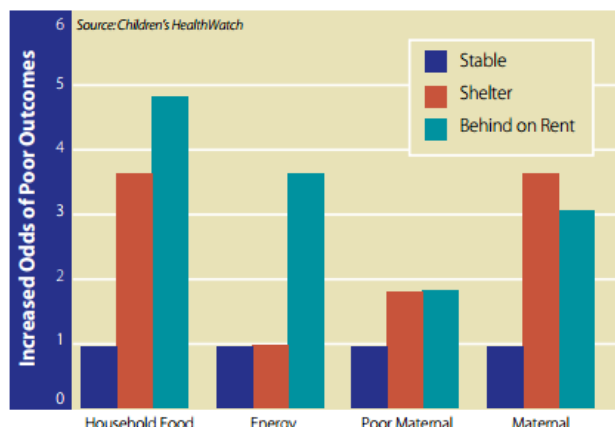


### Percent of Income Paid for Housing

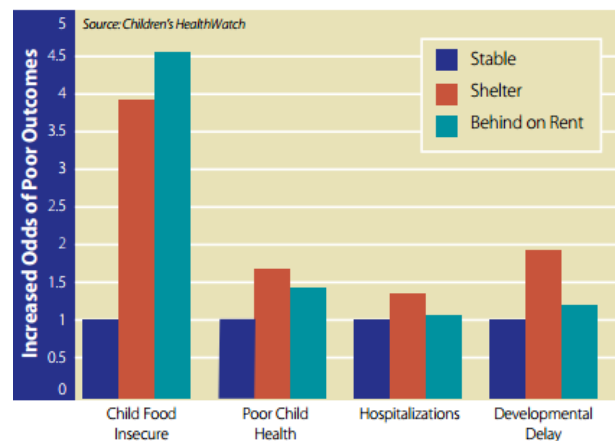


# Being Behind In Rent Harms Health

**FIGURE 1.**  
Household and Maternal Well-being  
Compromised by Struggle to Pay Rent

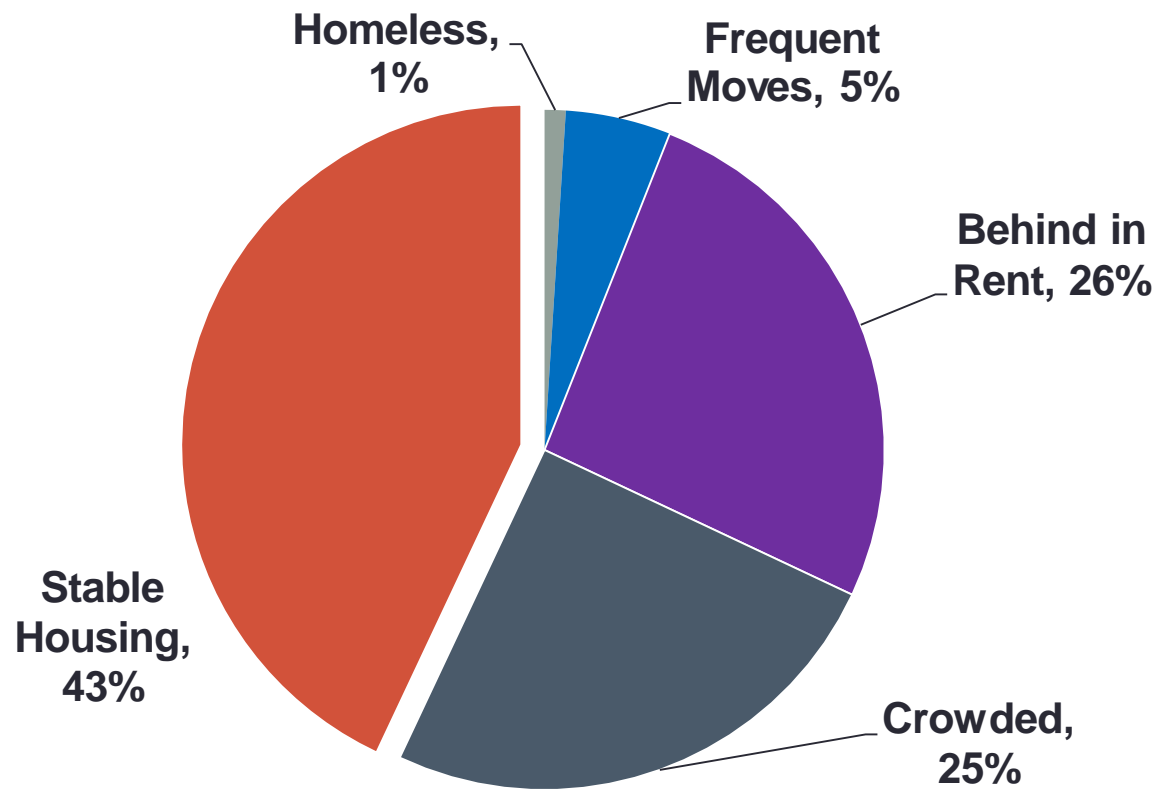


**FIGURE 2.**  
Child Health and Development Harmed  
by Family's Struggle to Pay Rent

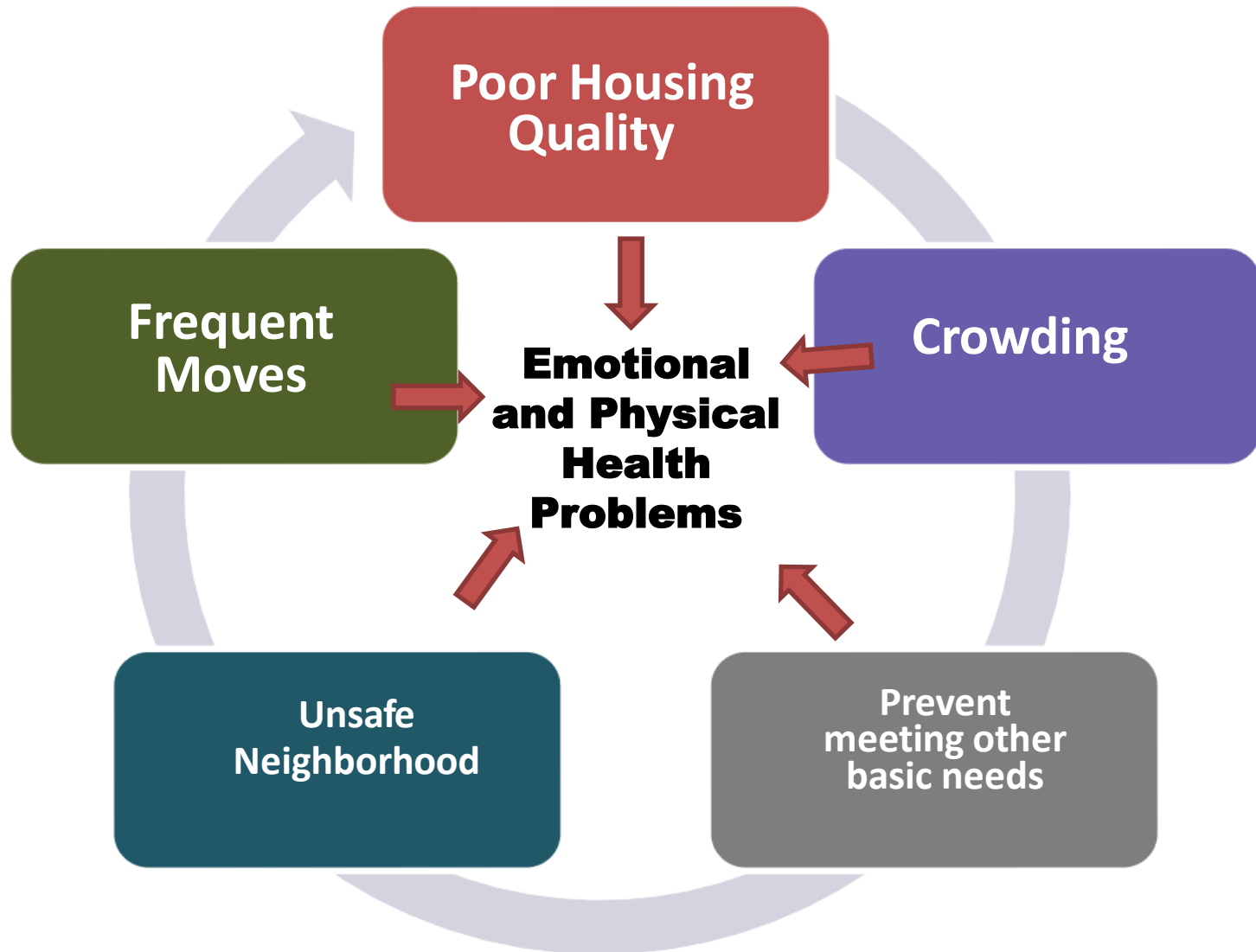


- Being behind on rent strongly associated with negative health outcomes
  - High risk of child food insecurity
  - Children & mothers more likely in fair or poor health
  - Children more likely at risk for developmental delay
  - Mothers more likely experiencing depressive symptoms

# 56% of Philadelphia's Families are Housing Insecure



# The Cycle of Housing Insecurity







# HOUSING QUALITY AND HEALTH: LEAD POISONING

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# Lead Poisoning of Children

- Entirely Preventable
- Irreversible and Long Term Harm
  - Lowered IQ
  - Behavior problems
  - Learning disabilities
  - Cardiovascular, immune and endocrine Problems
- Prevention requires home remediation: education and cleaning does not prevent lead poisoning.

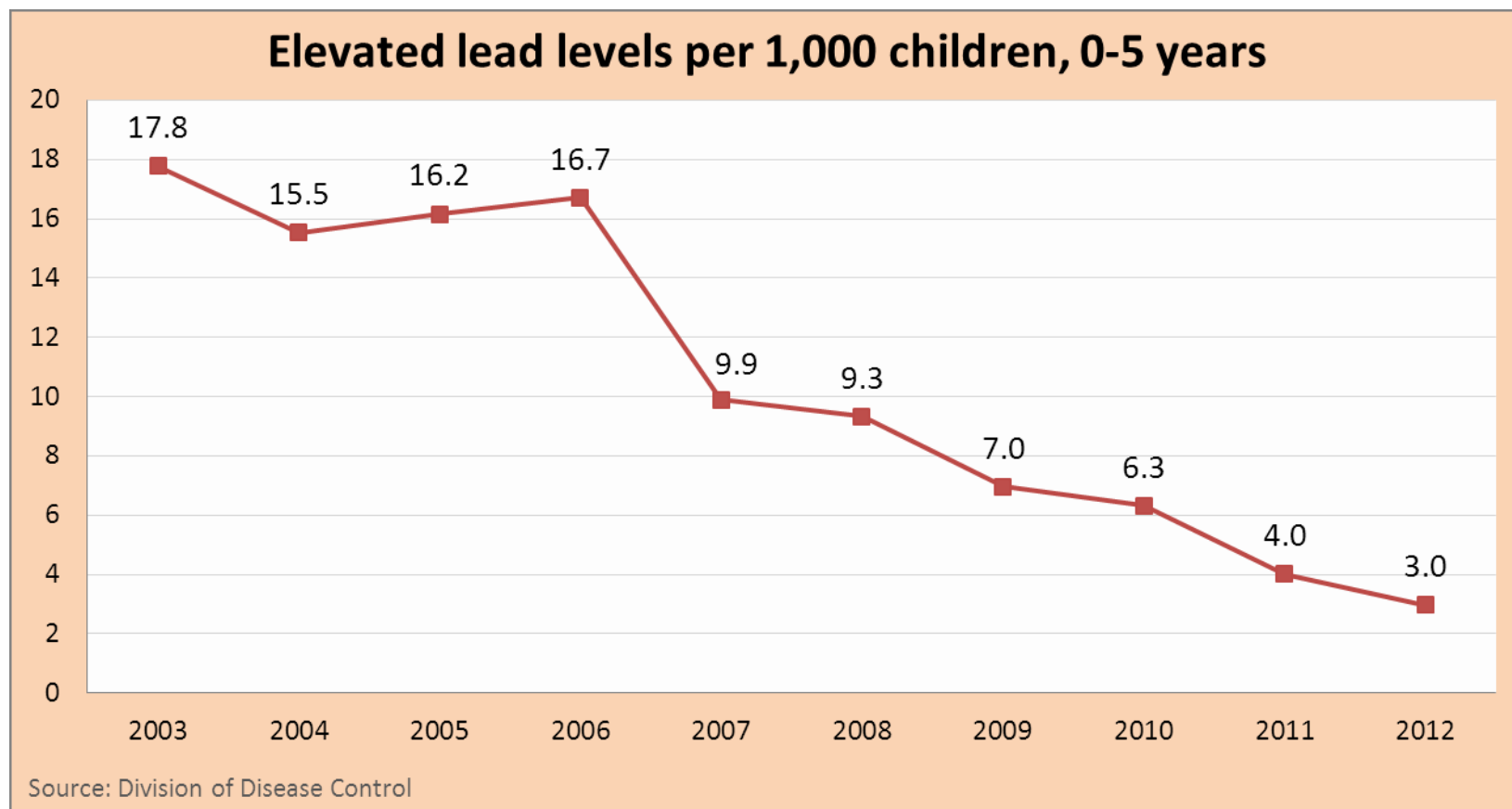


# Lead Screening and Lead Poisoning of Children Philadelphia

Children Screened At least One Time for Blood Lead, Philadelphia, PA (0 to 5 years of age)		
Calendar Year	No. of Children Tested	% of Census Pop Tested
2010	89,500	74.8
2011	94,868	79.3
2012	98,889	82.7
<i>*Testing and child age as of Dec. 31<sup>st</sup> for year shown. Includes tests performed in previous years (PA NEDSS 4/11/14)</i>		

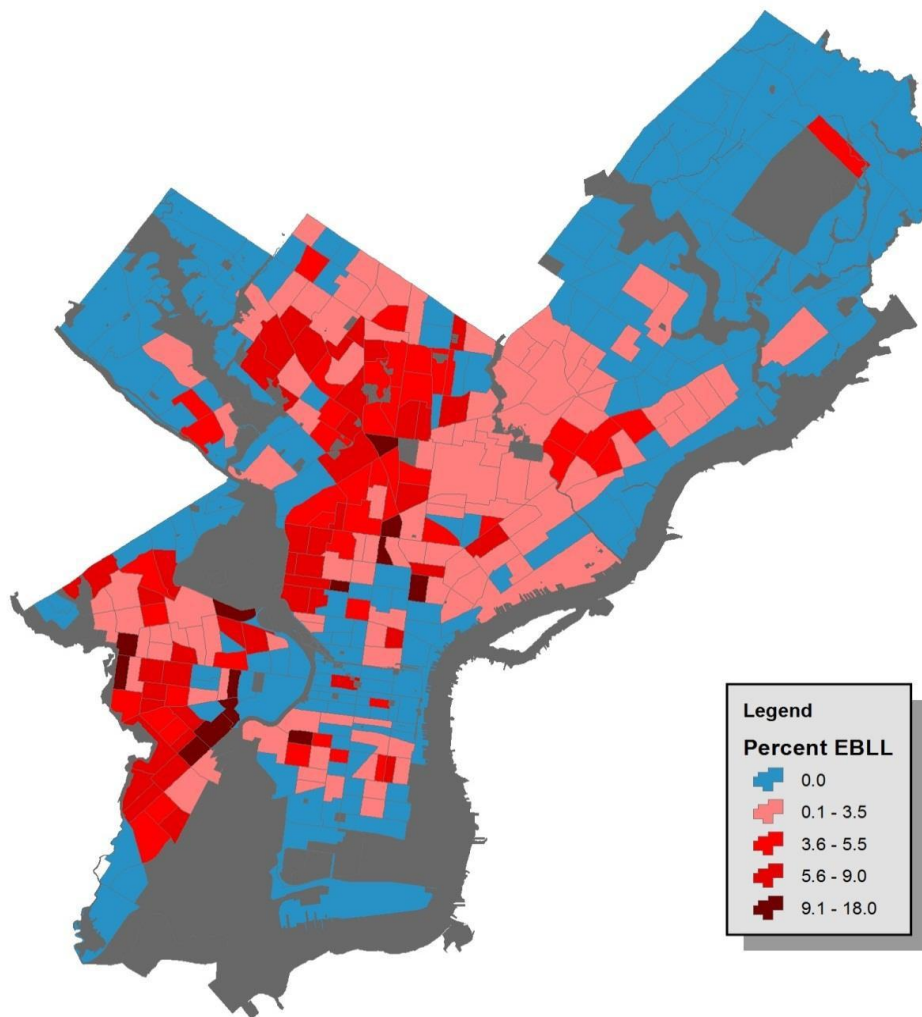
Children with confirmed EBL $\geq 10$ $\mu\text{g/dL}$ , Philadelphia, PA ( > 6 yrs)		
Year	No. of Children	Percent
2010	981	6.2
2011	648	3.9
2012	601	2.9
2013	552	2.9

# Decreasing Lead Poisoning Rates in Philadelphia ( $\geq 10 \mu\text{g}/\text{dL}$ ) (2003-2012)



Blood lead level of 10 micrograms per deciliter, or higher. Children only counted once if they have elevated lead levels in multiple years.

# Percent of Children Under 3 yrs. in Philadelphia with a lead test with an Elevated Blood Lead Level ( $\geq 10 \mu\text{g/dL}$ ) 2013



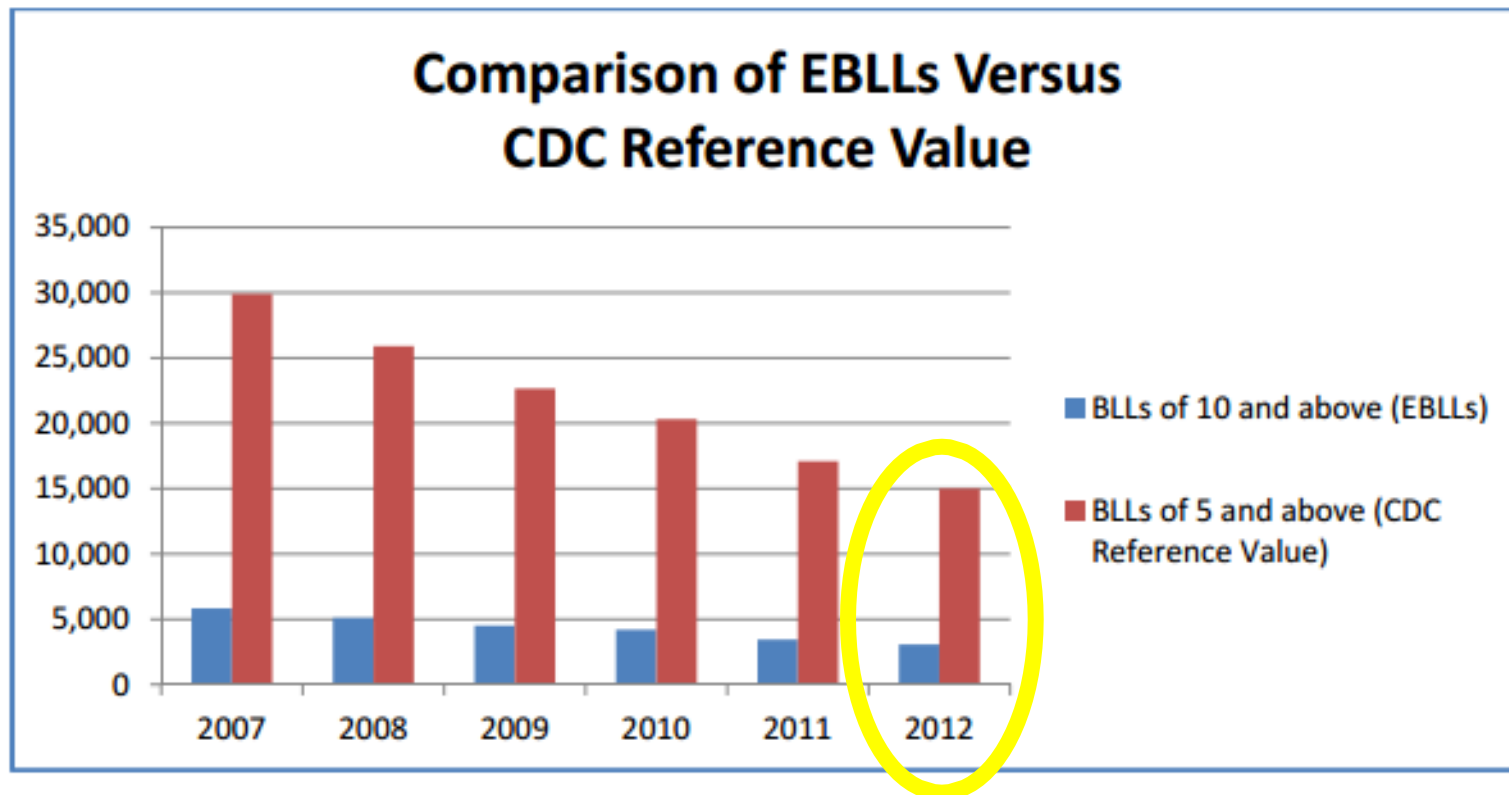


# There Is No Safe Level Of Lead Poisoning

- Numerous studies have shown that even low levels of lead poisoning cause harm
- Blood lead levels as low as 2  $\mu\text{g}/\text{dL}$  may be associated with declines in IQ
- Blood lead levels of 5–10  $\mu\text{g}/\text{dL}$  in school-age children are associated with deficits in intelligence, visual–spatial skills, executive function, and IQ adjusted academic achievement.
- 2014 cohort study 1300 preschool children in China with average 6  $\mu\text{g}/\text{dL}$  found emotional and behavioral problems such as anxiety, depression, or aggression

Jusko, Environmental Health Perspectives 2008, Surkan, NeuroToxicology 2007, Zhang , Singapore Med J 2014

# CDC New Reference Level Lead Poisoning to $\geq 5 \mu\text{g/dL}$ (2012)



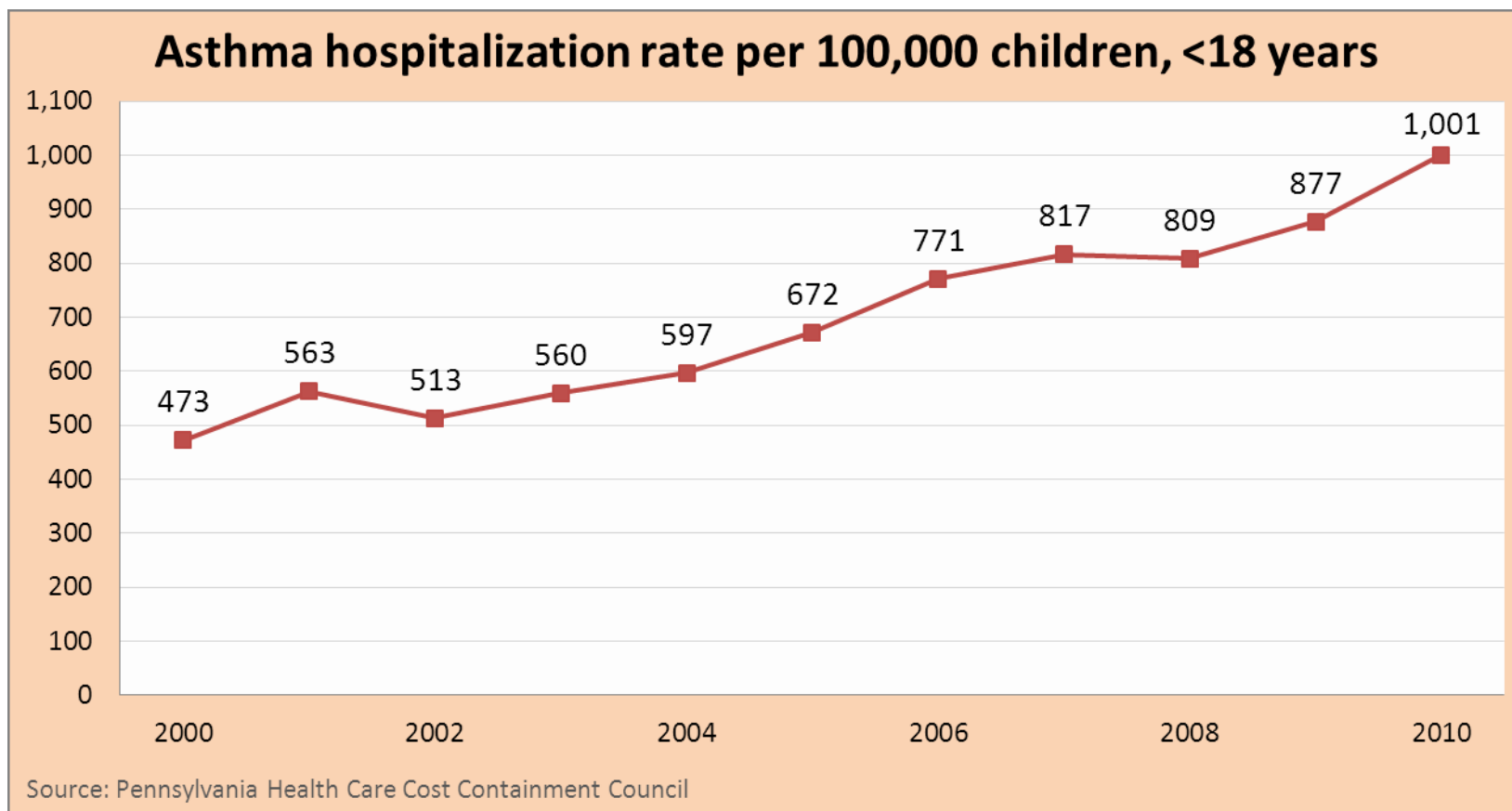
Approximately 5,000 children in Philadelphia



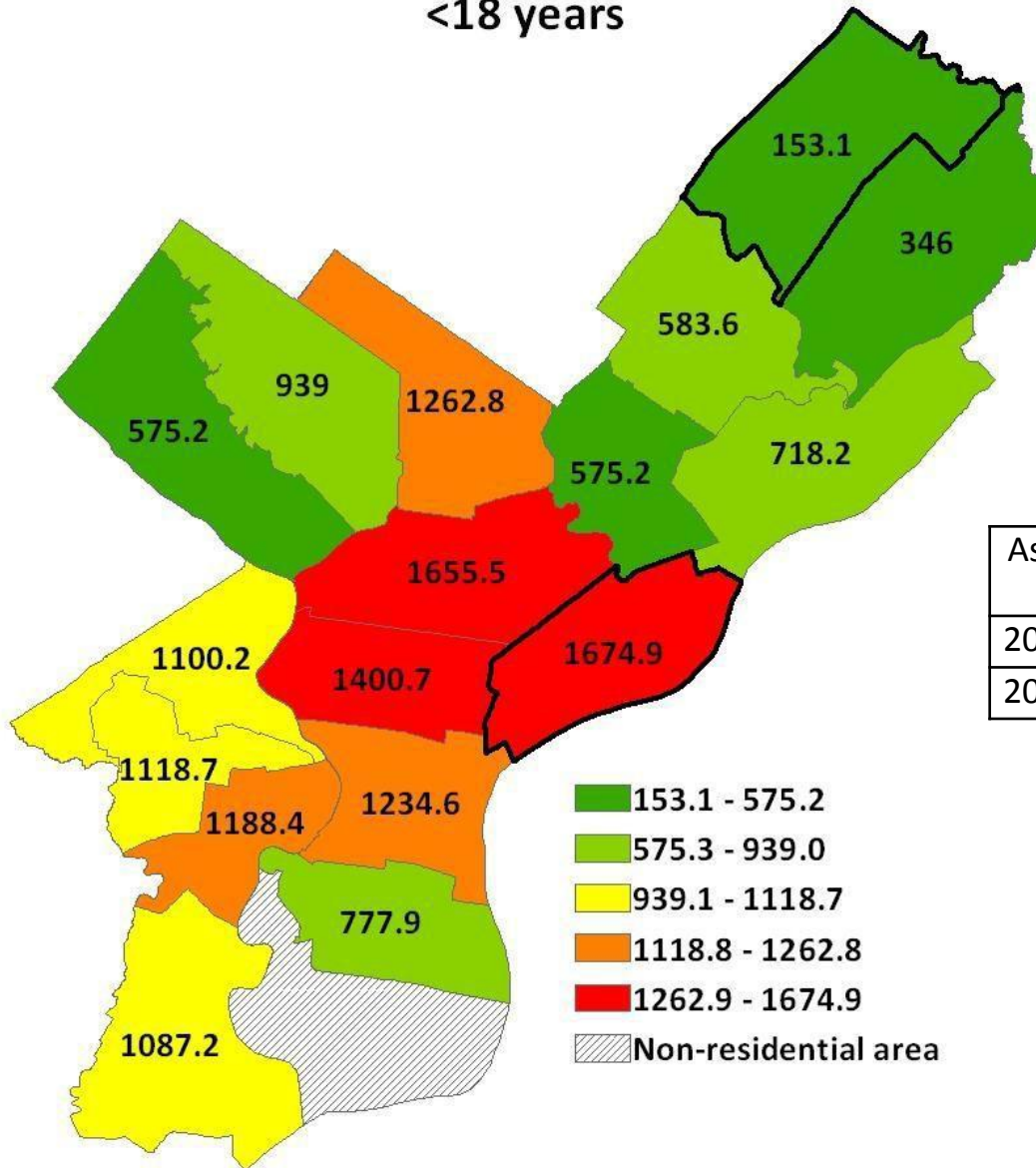
# HOUSING QUALITY AND HEALTH: ASTHMA

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# Child Asthma Hospitalization Philadelphia (2000-2010)



## Child asthma hospitalization rate per 100,000, <18 years

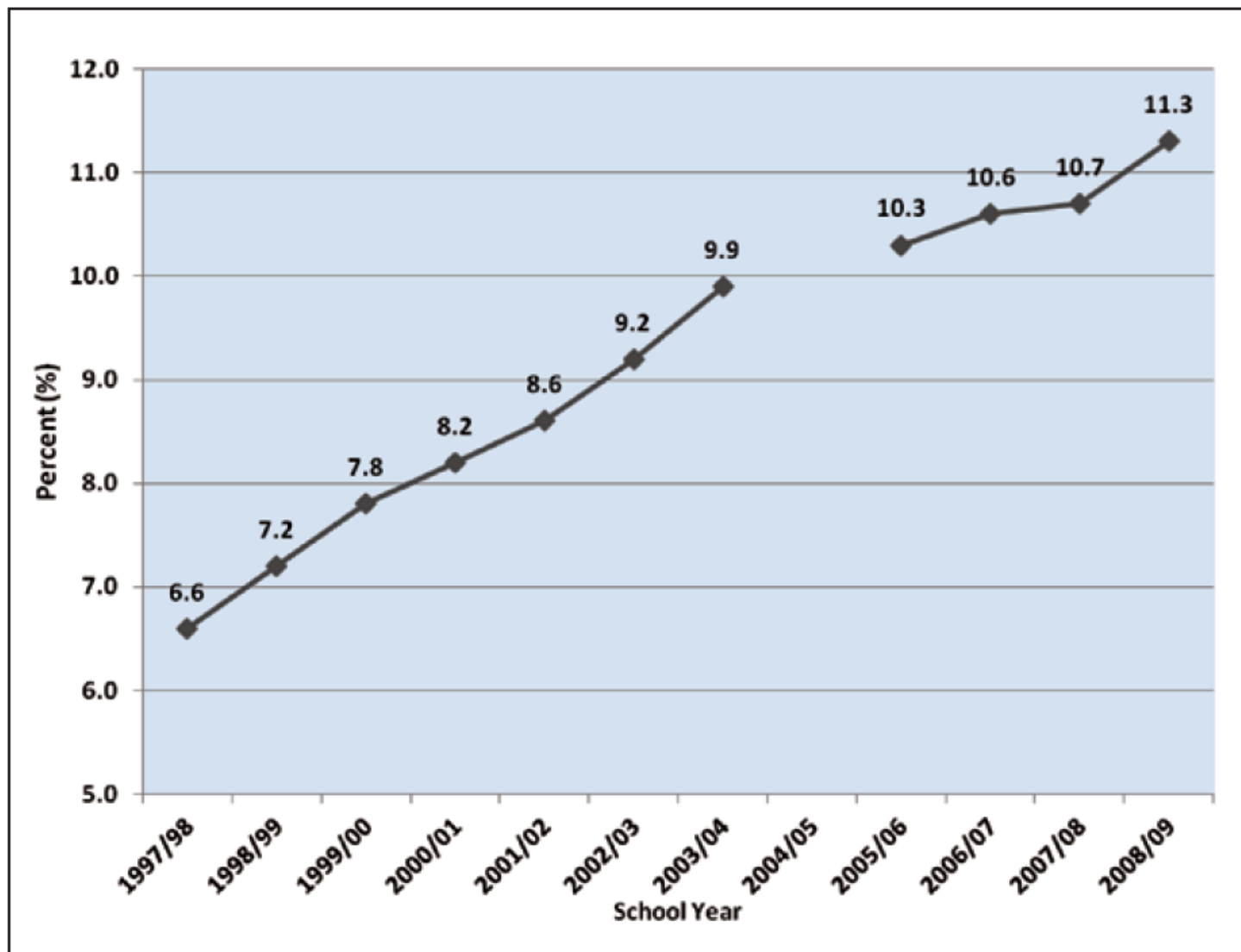


Asthma Related ER Visits Children < 18 yrs. Philadelphia, PA	
2009	10,5550
2010	9,958

PDPH Syndromic Surveillance System



**Figure 4-1: Lifetime Asthma Prevalence among School Students, PA 1997/98-2008/09**



Data Source: Bureau of Community Health Systems (BCHS), Division of School Health

Note: the 2004-2005 School Year Data was not available from BCHS

From the 1997/98 to the 2008/09 school year, the prevalence of asthma steadily increased every year (although 2004/05 school year data is not included). By the



# The Healthy Homes Healthy Kids Program

City of Philadelphia Department of Public Health

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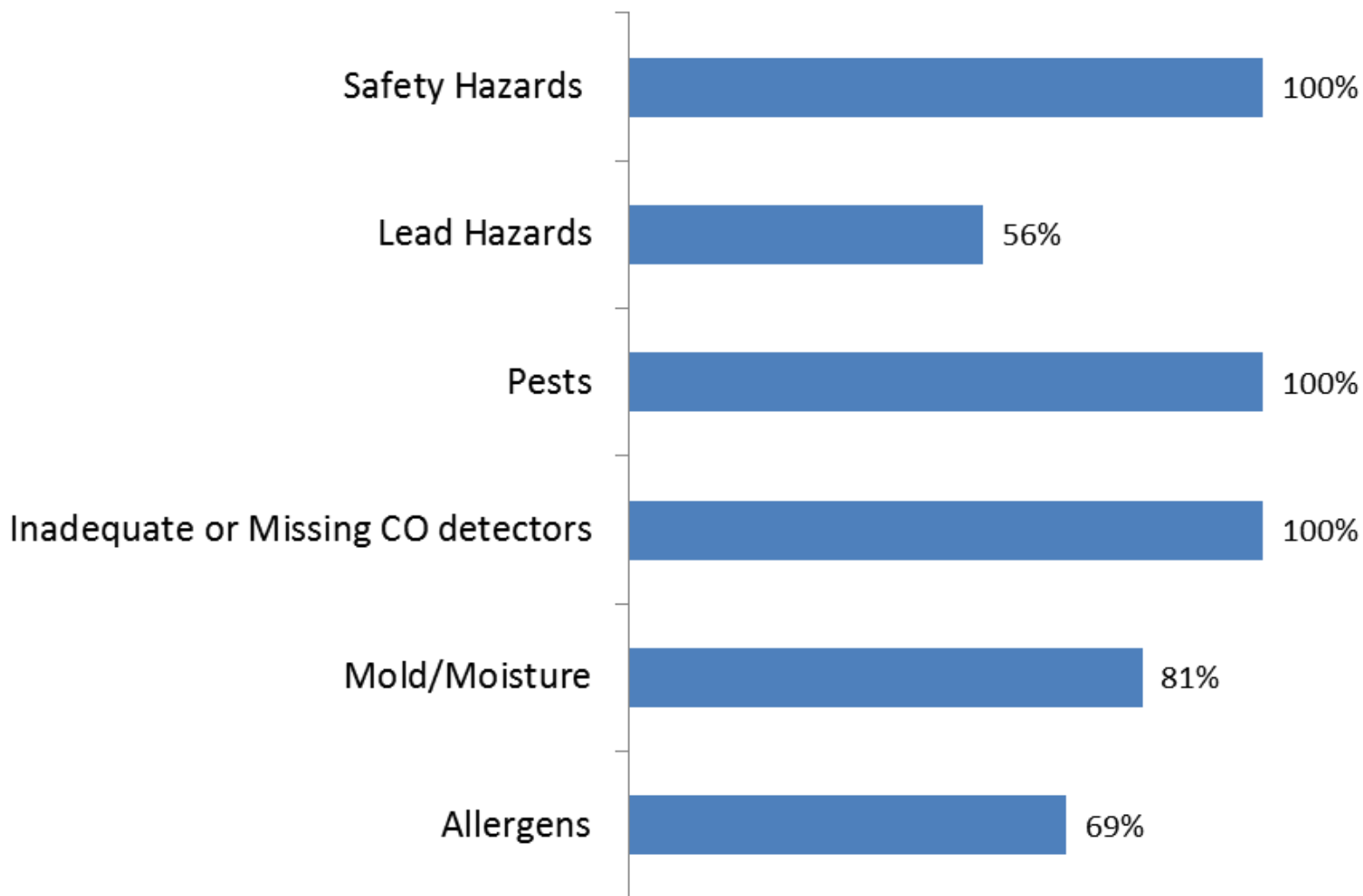


# Healthy Homes Healthy Kids Program

- Collaboration with St. Christopher's Hospital for children with severe asthma
- **Integrates clinical, environmental and educational strategies** to successfully mitigate and manage a child's asthma, prevent lead poisoning and address other health and safety hazards
- Close collaboration family, medical team and HHHK team to address housing conditions and behavior.
- Services are provided in English and Spanish in an appropriate cultural framework.

# Healthy Homes Healthy Kids

## % of Properties with Health and Safety Hazards



(January 2013 – December 2014) N=160



# What We Do

## 1. Reduce Environmental Health and Safety Hazards

- Repair Leaks
- Remove mold and repair water damage
- Rip up old carpeting and refinish floors
- Replace leaded windows where children can reach
- Vector Control Unit services (Integrated Pest Management)
- Energy Audit and Weatherization

## 2. Help Families Engage in Healthier Behavior

- Personalized Environmental Action Plan & Motivational Interviews
- Issues include: clutter, tobacco smoke, stop use of perfumes, candles, noxious cleaning and pest control supplies

## 3. Partner with Clinical Team

- Biweekly calls for information sharing
- Ensure child and caregiver understand and use medication as prescribed





# Average Cost Per Unit of Healthy Homes Healthy Kids Intervention

Activity/Personnel	Cost
Remediation	\$ 3000
Integrated Pest Management	\$ 150
Staffing	\$ 110
Client supplies	\$ 200
Total Cost For HHHK Services per unit	\$3500
Weatherization (selected homes only)	\$1200



## Healthy Homes Health Kids Child Health Outcomes\* (January 2011 through December 2013)

	Pre-Intervention (first home visit)	Post-Intervention (3 months after home remediation)	Change
No. of hospitalizations for asthma in past 6 months	1.7	0.3	70% fewer hospitalizations
No. of emergency room visits for asthma in past 6 months	3.8	0.9	76% fewer ER visits
No. of doctor's visits for asthma in the past 6 months	3.7	1.4	62% fewer doctor's visits
No. of missed school days or daycare because of asthma in the past month	4.0	1.9	53% fewer missed days of school or daycare
Use of Albuterol pump in the past two weeks	8.6	3.9	55 % fewer uses of Albuterol Pump

\* Numbers are average of 117 children surveyed based on pre and post test questionnaires



# Goal One: Partnerships

with community organizations, health care providers, government agencies, landlord organizations, health insurers, housing organizations, and legal services.

*Increase awareness and leadership for safe and healthy housing for low income children.*



## Goal Two: Services and Support

to ensure families have the resources,  
information, support, access to  
health care and legal services they need  
to reduce the health and safety hazards  
in their homes.

*Ensure that services are available to protect  
against retaliatory eviction and assist  
families seeking to live in safer housing  
conditions.*



# Goal Three: Sustainable Funding

for services and home repair to reduce the health and safety hazards in homes and support families healthy behavioral changes.

*Explore reimbursement strategies including Medicaid, Private Insurance, Medicaid MCOs, and Hospitals along with low interest loans and grants for home repair.*





## Goal Four: Data and Information

to develop a robust understanding of housing quality in Philadelphia, to understand the prevalence of health and safety housing issues and their impact on children's health and to evaluate the effectiveness of interventions.

*Develop a central clearinghouse of information: collect data and map housing characteristics, make public up-to-date reports on housing code enforcement*



# Goal Five: Enhanced Enforcement

of the Health Code, Property Maintenance Code and other laws as to help improve the housing conditions of children.

*Use legal tools when needed to improve the housing conditions where children live.*

Unsafe housing is a danger to the health of millions of people across the United States. Minorities and lower income families have significantly higher odds of living in inadequate housing. And they pay a steep price in their own health.”

*Kathleen Sebelius, Secretary of Health and Human Services  
National Healthy Homes Conference, Denver, CO  
June 23, 2011*



# For More Information

[How Housing Matters, MacArthur Foundation and Urban Land Institute](#)

[RWJ Foundation Social Determinants of Health Issue Brief 7: Housing and Health](#)

[National Center for Healthy Housing](#)

[ChangeLab Solutions Healthy Housing Resources](#)