



Quality of Life Impacts of Bed Bug (*Cimex lectularius* L.) Infestations

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Bed bugs are parasitic insects in the Cimicidae family that feed exclusively on blood. The common bed bug, *Cimex lectularius*, is the best known cimicid as it prefers to feed on human blood. Living with bed bug infestations may cause economic, social and human health costs.

The **University of Arizona and partnering research institutions** are working to battle the bed bug resurgence in the U.S. The researchers hope to determine the real impact and social cost of bed bugs, the risks to individuals and society, as well as the significant causes of infestations. A national online bed bug survey was launched in 2014 (1) to identify risk factors most associated with bed bug infestations; (2) to document specific stresses attributed to dealing with bed bugs by people who have experienced infestations; and (3) to examine and compare pest management practices, including pesticide use, of people who have and have not experienced bed bug infestations. The anonymous online survey was implemented on SurveyMonkey following Institutional Review Board (IRB) approval of the survey instrument and methods. Information and documentation can be found at <http://cals.arizona.edu/apmc/public-health-IPM>.

The target audience are adults living in the U.S. that accessed information about bed bugs online. Data are collected from people who have experienced, are currently experiencing, and who have never experienced bed bug infestation. The survey will run for a couple of years, presented here are the 1st quarter results (n=289).

English version of Bed Bug survey: <http://www.surveymonkey.com/s/DGLQS52>
*Spanish version of Bed Bug survey: <https://es.surveymonkey.com/s/F5NZXJK>

*No data is included from the survey in Spanish due to the low response rate.

People who have experienced bed bug infestations in the past

- 66.7% reported swollen, itchy bumps or sores, in which 11.1% had resulted in the need for medical attention.
- 69.6% hired a pest management service to apply pesticides; 17.4% worked with more than 1 company.
- 44.4% had personally applied chemicals 2-3 times, 33.3% had applied chemicals more than 8 times, 11.1% reported using non-pesticide chemicals such as gasoline in attempts to control bed bugs.

Figure 3. People who have experienced bed bugs in the past reported the following quality of life impacts :

- A. 88.5% **suffer sleep loss**;
- E. 84.6% **cannot relax**;
- U. 57.7% **have concerns that they transferred bed bugs to other homes or locations**;
- S. 42.3% **have feelings of depression**;
- F. 34.6% **report financial losses**;
- C. 30.8% cannot fulfill work duties;
- H. 26.9% feel isolated socially;
- Q. 23.1% report a decline in health;
- T. 11.5% suffer increases in mental health problems.



Additional findings

- Analysis indicated nearly half of the responding residents are currently living with bed bugs, or have dealt with bed bugs in the past.
- Initial data indicate that low-income homes, and homes with residents reporting a handicap have higher bed bug incidence.
- Nearly half of the respondents applied over-the-counter products to combat bed bug infestations. Many residents reported using do-it-yourself treatments involving hazardous non-pesticide chemicals.
- Residents with no bed bug history stay with friends and family less often, and host visitors less often.

Are you currently living in a place with bed bugs?

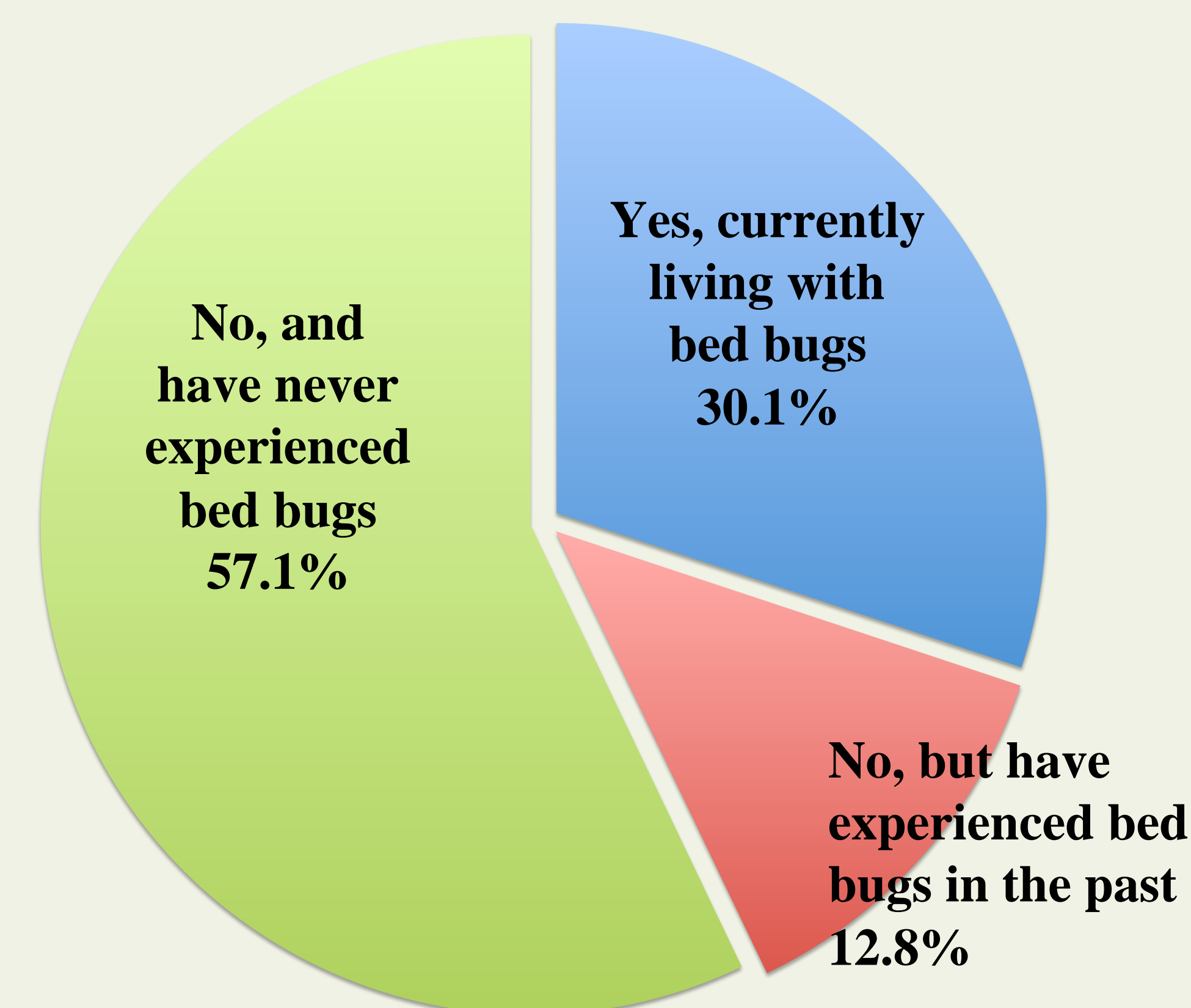


Figure 1. Out of 289 respondents to the survey in English, 30.1% have bed bugs at home, 12.8% have experienced bed bugs in the past and 57.1% have never lived with bed bugs.



People who are currently with bed bug infestations

- 42.3% had pest control experts identify the bed bugs, while 38.0% identified their bed bugs using internet or literature resources.
- 68.5% reported noticing bites within the last 6 months, 11.0% had experienced bites for over a year, and 6.9% reported that they had not noticed bites at all.
- 68.1% reported swollen, itchy bumps or sores, in which 16.7% had resulted in the need for medical attention.

- People with infestations are twice as likely to have acquired second hand articles two or more times per year, compared to those who have experienced bed bugs in the past, but no longer have them.
- People used the following methods to combat bed bugs: 50.8% had applied at least 2-3 different retail pesticides; 39.7% had a pest management company apply pesticides; 19.1% used total release foggers.
- 35.3% had personally applied chemicals 2-3 times, 21.6% had applied chemicals more than 8 times. 23.5% reported using chemicals such as gasoline.

Figure 2. People who are currently with bed bug infestations

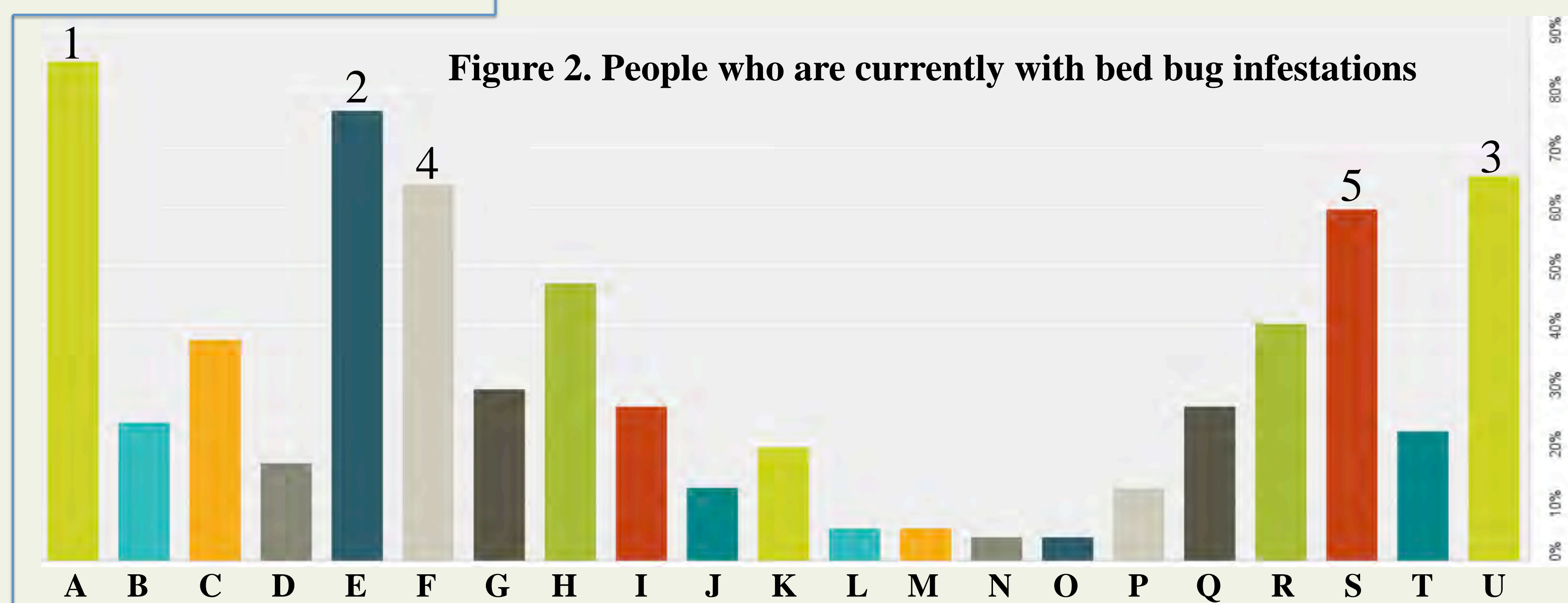


Figure 2. People currently with bed bugs reported the following quality of life impacts:



- A. 84.7% **suffer sleep loss**;
- E. 76.4% **cannot relax**;
- U. 65.3% **have concerns that they have transferred bed bugs to other homes or locations**;
- F. 63.9% **report financial losses**;
- S. 59.7% **have feelings of depression**;
- H. 47.2% **feel isolated socially**;
- R. 40.3% suffer a loss of self-esteem;
- C. 37.5% cannot fulfill work duties as well as usual;
- G. 29.2% have lost personal relationships;
- I. 26.4% have lost friends and family connections;
- Q. 26.4% report a decline in health;
- B. 23.6% cannot eat properly;
- T. 22.2% suffer increases in mental health problems;
- K. 19.4% increase smoking; D. 16.7% cannot parent or care for dependents as well as usual; J. 12.5% increase their alcohol consumption; P. 12.5% increase or decrease body weight; L. 5.6% increase prescription drug use; M. 5.6% increase in illicit drug use; N. 4.2% have lost a job; O. 4.2% have lost a home.

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