Center for American Progress

FACT SHEET

The Population of Pregnant Women at Potential Risk of Zika Virus Infection

By Topher Spiro and Thomas Huelskoetter May 26, 2016

On May 20, 2016, the Centers for Disease Control and Prevention, or CDC, reported that 157 pregnant women in U.S. states and 122 pregnant women in U.S. territories had laboratory evidence of possible Zika virus infection.[1] In this issue brief, the Center for American Progress estimates the state-by-state populations of pregnant women who will be at potential risk of Zika virus infection this summer and fall. Nationally, we estimate that more than 2 million pregnant women will be potentially at risk.

In most cases, the Zika virus spreads to humans via bites from *Aedes* species mosquitoes carrying the virus.[2] The virus can also be transmitted sexually by men to their partners or from a pregnant woman to her fetus. Typical symptoms of the virus are mild: fever, rash, joint pain, and conjunctivitis.[3] However, the virus can cause a serious birth defect called microcephaly and other fetal brain problems. It has also been linked to Guillain-Barré syndrome, which can cause muscle weakness and even paralysis.[4] Given what is now known about the virus, pregnant women are at the highest risk for severe consequences from Zika virus infection.

There is no vaccine or treatment for the Zika virus. Rather, individuals must take preventive action by using insect repellant and eliminating sources of standing water in their neighborhoods, and governments must provide education and employ mosquito control measures. These efforts must be coupled with access to quality health care and supports for women.[5]

So far, none of the cases in U.S. states are the result of local transmission via mosquitoes. But with warm and humid conditions that are suitable for mosquito breeding fast approaching, it is only a matter of time. Many factors will affect the actual prevalence of Zika virus infection, but the only factor within government control is the extent of prevention and response. These measures require significant resources, but despite President Barack Obama's request for $1.9 billion in emergency funding in February, the U.S. Congress still has not provided any funding to combat the Zika virus.[6]

Analysis and methodology

We used the most recent CDC data available—for 2013 and 2014—on births by month and state.[7] Of course, birth rates in 2016 will not be exactly the same as in 2013 and 2014; however, they will be similar enough to provide meaningful context on the size of the at-risk population of pregnant women in 2016.

During any given month, we assume that the number of pregnant women equals the number of births that occurred in each month for nine months starting from (and including) that month. When meteorological conditions are suitable for the *Aedes aegypti* mosquito for multiple months in a state, we subtracted the number of pregnant women already accounted for in a previous month to avoid double counting.

To determine how many months of data to include for a given state, we used the results of a meteorological model that simulates the potential abundance of the *A. aegypti* mosquito by area over the course of the year.[8] To be conservative in our estimates, we excluded months for a state—and excluded a state entirely—when the potential mosquito abundance is only low to moderate throughout all areas of the state. As a result, we do not report estimates for California, Arizona, and New Mexico—even though meteorological conditions may be suitable for local transmission in these states.

The meteorological model provides simulations for major cities, which we extrapolated to other areas within a state. While meteorological conditions in cities and other areas within a state could differ, our analysis is conservative in that it focuses only on months when areas are projected to have a moderate to high potential mosquito abundance. When simulations were not available for a state (such as West Virginia) but it is within the CDC-estimated range of the *A. aegypti* mosquito,[9] we extrapolated simulations from neighboring areas. Because New York City and Philadelphia are the only areas of their respective states that are within the CDC-estimated range, we used CDC county-level birth data for these areas, rather than including data for the entire state.

In general, within the CDC-estimated range of the *A. aegypti* mosquito, meteorological conditions are suitable for the mosquito in July, August, and September. However, there are notable exceptions. Florida, Texas, and Louisiana are suitable for the mosquito from May through November, and the other Southern states are suitable from June through October. These longer periods of potential mosquito abundance increase the population of pregnant women who will be at risk in these states.

Table 1 presents our results for each state or city that is projected to have an area of moderate to high potential mosquito abundance within the CDC-estimated range. We estimate that there will be more than 491,000 pregnant women at risk in Texas and more than 271,000 pregnant women at risk in Florida. The estimated number of pregnant women at risk will exceed 100,000 in Georgia, New Jersey, New York City, North Carolina, and Virginia.

TABLE 1

Population of pregnant women potentially at risk from Zika, by state or city

State or city	Estimated months of moderate to high mosquito abundance	Estimated number of pregnancies during moderate- to high-risk months
Alabama	June–October	63,457
Arkansas	June–October	41,199
Delaware	July–September	10,065
District of Columbia	July–September	8,506
Florida	May–November	271,231
Georgia	June–October	139,769
Kentucky	July–September	51,275
Louisiana	May–November	79,792
Maryland	July–September	66,663
Mississippi	June–October	41,728
Missouri	July–September	69,783
New Jersey	July–October	103,312
New York City	July–October	117,067
North Carolina	June–October	129,720
Oklahoma	June–September	53,347
Philadelphia	July–October	22,476
South Carolina	June–October	61,780
Tennessee	June–September	80,292
Texas	May–November	491,914
Virginia	July–October	102,559
West Virginia	July–September	18,973
Total		**2,024,908**

Sources: Centers for Disease Control and Prevention, "VitalStats - Births, 2013 and 2014," available at http://www.cdc.gov/nchs/vitalstats/births.htm (last accessed May 2016); Centers for Disease Control and Prevention, "Estimated range of Aedes albopictus and Aedes aegypti in the United States, 2016," April 1, 2016, available at http://www.cdc.gov/zika/pdfs/zika-mosquito-maps.pdf; Andrew J. Monaghan and others, "On the Seasonal Occurrence and Abundance of the Zika Virus Vector Mosquito Aedes Aegypti in the Contiguous United States," PLOS, March 16, 2016, available at http://currents.plos.org/outbreaks/article/on-the-seasonal-occurrence-and-abundance-of-the-zika-virus-vector-mosquito-aedes-aegypti-in-the-contiguous-united-states/.

It is important to emphasize that the universe of pregnant women in areas where and when there is a moderate to high potential mosquito abundance is a broad measure of risk. In other words, our estimates are not projections of the prevalence of Zika virus infection. Only a fraction of this at-risk population is likely to be infected with the Zika virus. The factors that might affect the prevalence of infection include socio-economic conditions; travel patterns; the extent to which temperatures this summer are above or below normal; and most importantly, the extent of prevention and response measures taken by federal, state, and local governments.

What's more, only a fraction of individuals who are infected with the Zika virus develop symptoms. So far, among the 157 pregnant women in U.S. states with laboratory evidence of infection, 49 percent reported clinical symptoms, including rash, joint pain, fever, and conjunctivitis.[10] According to one study, fetal abnormalities were detected in 29 percent of 42 infected pregnant women in Rio de Janeiro.[11] However, due to the small sample sizes in these studies, it is possible that a greater or smaller share of infected pregnant women will develop symptoms.

Conclusion

While it is difficult to project the prevalence of Zika virus infection this summer, we are able to estimate the number of pregnant women and families who will have serious concerns because they live in an area that is projected to have a moderate to high potential abundance of the *A. aegypti* mosquito. To address this risk, policymakers must be proactive—but time is quickly running out.

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Endnotes

1 Unfortunately, the CDC birth data do not include U.S. territories, so our analysis does not include Puerto Rico. Regina M. Simeone and others, "Possible Zika Virus Infection Among Pregnant Women — United States and Territories, May 2016," *Morbidity and Mortality Weekly Report*, May 20, 2016, available at http://www.cdc.gov/mmwr/volumes/65/wr/mm6520e1.htm.

2 Centers for Disease Control and Prevention, "Zika Virus: Transmission & Risks," available at http://www.cdc.gov/zika/transmission/index.html (last accessed May 2016).

3 Centers for Disease Control and Prevention, "About Zika Virus Disease," available at http://www.cdc.gov/zika/about/index.html (last accessed May 2016).

4 Van-Mai Cao-Lormeau and others, "Guillain-Barré Syndrome outbreak associated with Zika virus infection in French Polynesia: a case-control study," *Lancet* 387 (2016): 1531–1539, available at http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(16)00562-6.pdf.

5 For more information, see Jamila Taylor, "Zika Virus in the United States" (Washington: Center for American Progress, 2016), available at https://cdn.americanprogress.org/wp-content/uploads/2016/05/24083006/TaylorZika-briefv2.pdf.

6 The White House, "Fact Sheet: Preparing for and Responding to the Zika Virus at Home and Abroad," Press release, February 8, 2016, available at https://www.whitehouse.gov/the-press-office/2016/02/08/fact-sheet-preparing-and-responding-zika-virus-home-and-abroad.

7 Centers for Disease Control and Prevention, "VitalStats - Births, 2013 and 2014," available at http://www.cdc.gov/nchs/vitalstats/births.htm (last accessed May 2016).

8 Andrew J. Monaghan and others, "On the Seasonal Occurrence and Abundance of the Zika Virus Vector Mosquito Aedes Aegypti in the Contiguous United States," PLOS, March 16, 2016, available at http://currents.plos.org/outbreaks/article/on-the-seasonal-occurrence-and-abundance-of-the-zika-virus-vector-mosquito-aedes-aegypti-in-the-contiguous-united-states/.

9 Centers for Disease Control and Prevention, "Estimated range of Aedes slbopictus and Aedes aegypti in the United States, 2016," April 1, 2016, available at http://www.cdc.gov/zika/pdfs/zika-mosquito-maps.pdf.

10 Simeone and others, "Possible Zika Virus Infection Among Pregnant Women — United States and Territories, May 2016."

11 Patrícia Brasil and others, "Zika Virus Infection in Pregnant Women in Rio de Janeiro — Preliminary Report," *New England Journal of Medicine*, March 4, 2016, available at http://www.nejm.org/doi/full/10.1056/NEJMoa1602412.