
Zika Virus Messaging to Pregnant Women Based on Travel Associations: Review of Vector-Borne Disease Communication Resources in the Northeastern U.S.



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Contents

Background	3
Methods	4
Results	6
Discussion	12
Limitations	13
Conclusion	13
References	15
Appendix A: Scope of Travel-Related Transmission	17
Appendix B: Example Resources	19

Background

Zika virus made its debut to the scientific community in the Zika forests of Uganda in 1947, and slowly spread to other African and Southeast-Asian countries throughout the next six decades [8]. The mosquito vector *Aedes aegypti* is the predominant global vector of this virus to human hosts, who can then spread the virus through sexual contact, blood transfusions, laboratory exposure, or from mother to child via intrauterine or intrapartum transmission [9]. Most cases of Zika virus are asymptomatic, making it difficult to track the true spread of the disease [13].

By October 2015, Zika virus had spread to Brazil, where mother-to-child viral transmission was associated with adverse pregnancy outcomes, such as microcephaly, and Guillain-Barré syndrome [9]. Following the widespread epidemic in Brazil, the World Health Organization officially declared the outbreak of Zika virus a Public Health Emergency in February 2016 [8]. By September of 2016, Zika virus had spread to the United States and was responsible for 2,354 symptomatic cases [12]. According to the Centers for Disease Control and Prevention (CDC), 99% of the spread in the United States was travel related: stemming either directly from travel or traced back to a traveler from a location with local Zika virus transmission [12]. Figure 1 shows countries with a history of local Zika virus transmission.

Travelers arriving from countries with high Zika virus incidence were strongly implicated in the identification of human cases in the United States [11]. To prevent the spread of the virus, travelers to these areas were advised to take precautions to prevent mosquito bites by using insect repellent, wearing long-sleeved shirts and pants, and by keeping mosquitoes out of their place of lodging [3]. Recommendations also targeted sexual intercourse through the use of protection such as condoms or dental dams [3]. CDC recommended expecting mothers to be tested for Zika virus upon their return home from high-risk locations as an additional precaution [3].

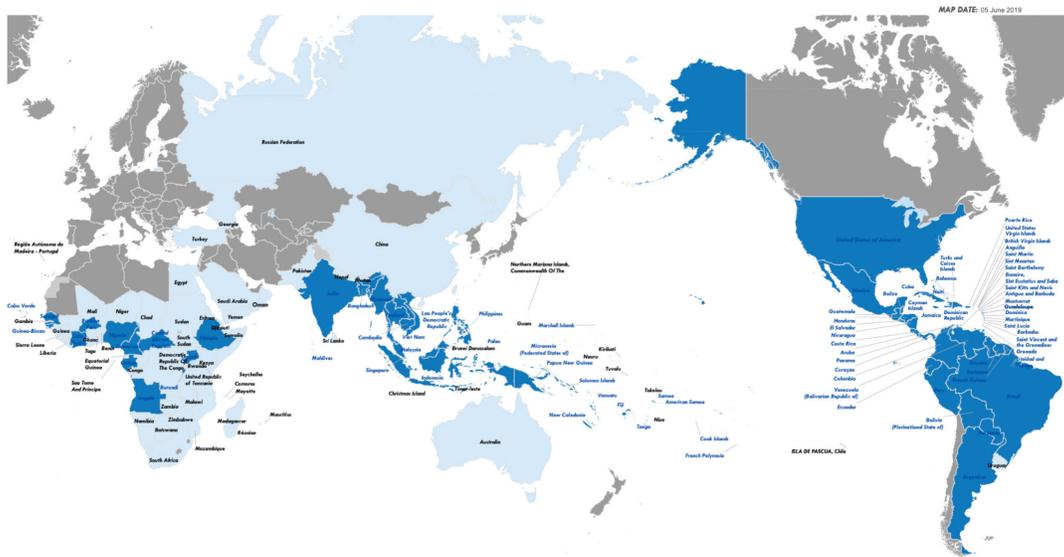


Figure 1. Countries and territories with current or previous Zika virus transmission [14]

Resources such as infographics, small print media, and videos can be used by public health professionals to educate the public on measures to protect themselves against infection [6]. Since pregnant travelers were at a high risk for developing severe complications from contracting Zika virus, resources dedicated solely to prevention among this specific population were vital [13]. Additionally, states with higher incidence and increased travel to high-risk locations required higher quality, targeted resources to adequately serve their constituents at risk of Zika virus infection. The purpose of this assessment was to evaluate state campaigns targeting pregnant travelers regarding Zika virus risk and prevention against best practice guidance for effective and persuasive public health communication.

Methods

To determine whether pregnant travelers had access to high quality resources, we evaluated the quality of available Zika virus prevention materials targeted towards this demographic in the context of travel and case count data from the 2015-2016 outbreak. Using case count data from the CDC, we identified the number of Zika virus

cases in each of the states of the northeast region of the United States [4]. Travel data of the most popular origin and destination cities between 2014 and 2015 were assessed in conjunction with Zika case count data to understand the association between travel and viral transmission risk [9]. Project team members identified outreach resources meeting our inclusion criteria using a previously-generated database of vector-borne disease outreach and education resources for northeast communities [6]. Materials produced by institutions within the Northeast Regional Center for Excellence in Vector-Borne Diseases (NEVBD) catchment area that focused on pregnant travelers were selected from this database, as they met the criteria to be included in the analysis. This catchment area includes the states of Connecticut, Delaware, Massachusetts, Maryland, Maine, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Virginia, Vermont, West Virginia, along with the District of Columbia. Briefly, these resources were identified through an online search of public agency websites and Google search engine results to identify web-based outreach materials on vector-borne disease prevention, which were cataloged into a database [6]. An additional cursory internet search was conducted to identify any resources related to pregnant travelers and Zika virus that were excluded from the original database.

The CDC's Clear Communication Index (CCI) was used to determine the quality of the resources available to this population. Based on research on effective public health messaging, the CCI is a tool that objectively quantifies the clarity and understanding of educational materials. The tool consists of 20 questions split into 4 categories: core, behavioral recommendations, numbers, and risk. Measurement in each category results in a total score out of 100; a perfect score indicates a resource's message is clearly communicated. Resources that score 90 or above were considered passing and meet most of the necessary criteria for clear communication, while those that score below 90 could have been improved to better communicate to the target population. Each of the identified resources related to Zika virus which target pregnant travelers were analyzed using the CCI scoring method. Results of the CCI assessments were exported into Microsoft Excel, where descriptive statistical analysis was performed to determine the overall quality of materials available in the region. Materials considered

'very low quality' scored between 50 and 64 on the CCI; those considered 'poor quality' scored between 65 and 70; those considered 'fair quality' scored between 71 and 89; and materials which scored a 90 or above were considered passing,' high quality' resources.

Results

Table 1. Average score on Clear Communication Index and Case Counts by Date [4]

State	CT	DE	DC	ME	MD	MA	NH	NJ	NY	PA	RI	VT	VA	WV
Number of Resources	0	2	2	1	3	1	2	6	5	1	3	0	2	0
Average CCI Score	N/A	53.6	71.4	70	57.1	70	65	74.9	82.9	92.9	88.1	N/A	92.9	N/A
Case Counts 2015-2017	126	17	48	13	143	134	12	193	1069	183	59	15	120	12
Case Counts 2018-2020	0	0	0	0	4	1	0	9	13	0	0	0	3	0

The Zika virus epidemic stretched from 2015 through 2017, with the highest infection rates within this timeframe [4]. The state of New York had significantly higher Zika incidence than other states in the Northeast region, with 1069 cases reported during outbreak years. Pennsylvania, the state with the next highest caseload, had nearly six times less than New York with only 183 reported cases of Zika virus. Figure 2 shows the number of cases reported by states in the area during this outbreak.

Although the outbreak has ended, the transmission of Zika virus has not. Figure 3 shows the number of cases reported in the same geographical area during the years immediately following the outbreak. Transmission during this period was still highest in the state of New York, but the incidence of Zika virus dramatically reduced after the epidemic [4]. The high case load observed in New York may be due to the high travel volume to this state, particularly from regions with high Zika incidence. According to Nelson et al., New York had the highest number of passenger arrivals by air, land, and sea of states in the NEVBD catchment region between 2014 and 2015 [9]. The same data set shows that Maryland has the lowest number of travelers in the NEVBD

catchment region, and that Massachusetts' travel volume falls in the middle of the distribution.

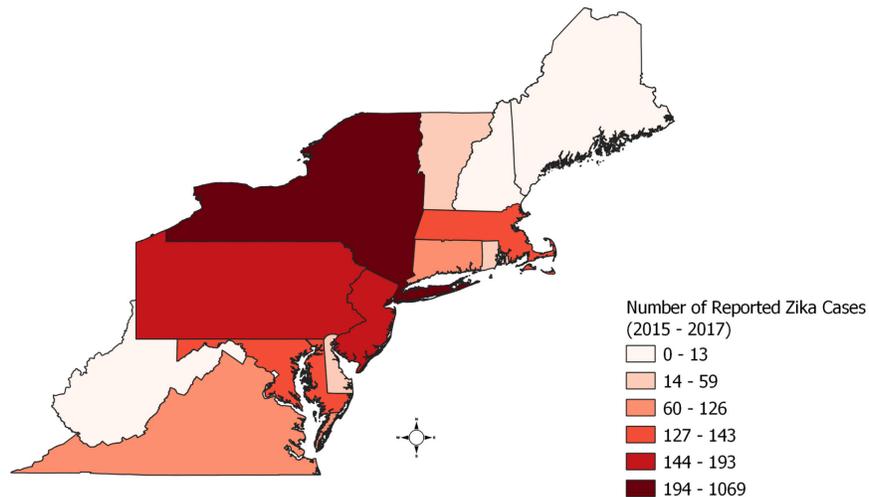


Figure 2. Zika virus case count during outbreak years 2015-2017. [4]

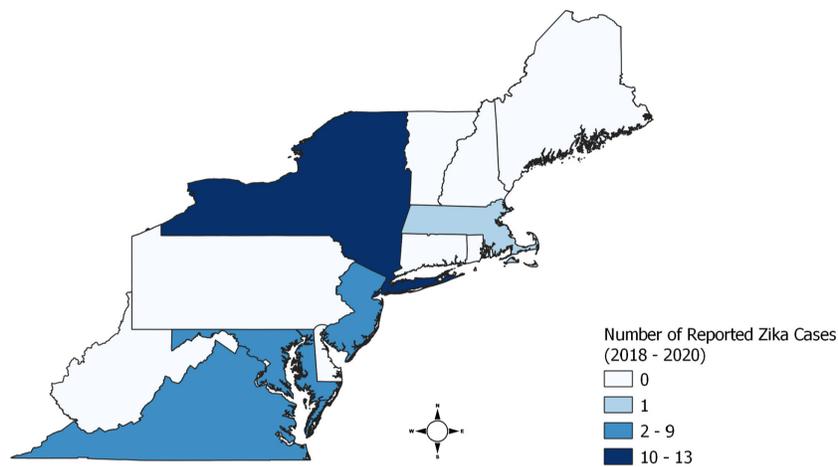


Figure 3. Zika virus case count during post-outbreak years 2018-2020. [4]

Most of these passengers originated from areas with high incidence of Zika virus, such as Mexico, Puerto Rico, Dominican Republic, and Brazil [9]. Refer to Appendix A for detailed information regarding the origin and destination of travelers during this time.

Of the 388 resources identified in the original NEVBD database, 28 met the inclusion criteria of materials focusing on Zika virus and pregnant travelers [6]. Ten additional resources were gathered during the secondary search for Zika related resources focused on pregnancy, resulting in a total of 38 resources included in this

analysis. Only 7 of these 38 resources were directed towards the target population, expecting mothers, specifically. The other 31 resources mentioned expectant mothers, but did not exclusively focus the material on this group. Some states, including West Virginia, Massachusetts, and Vermont, did not produce any Zika virus resources at all, and were not analyzed using the CCI.

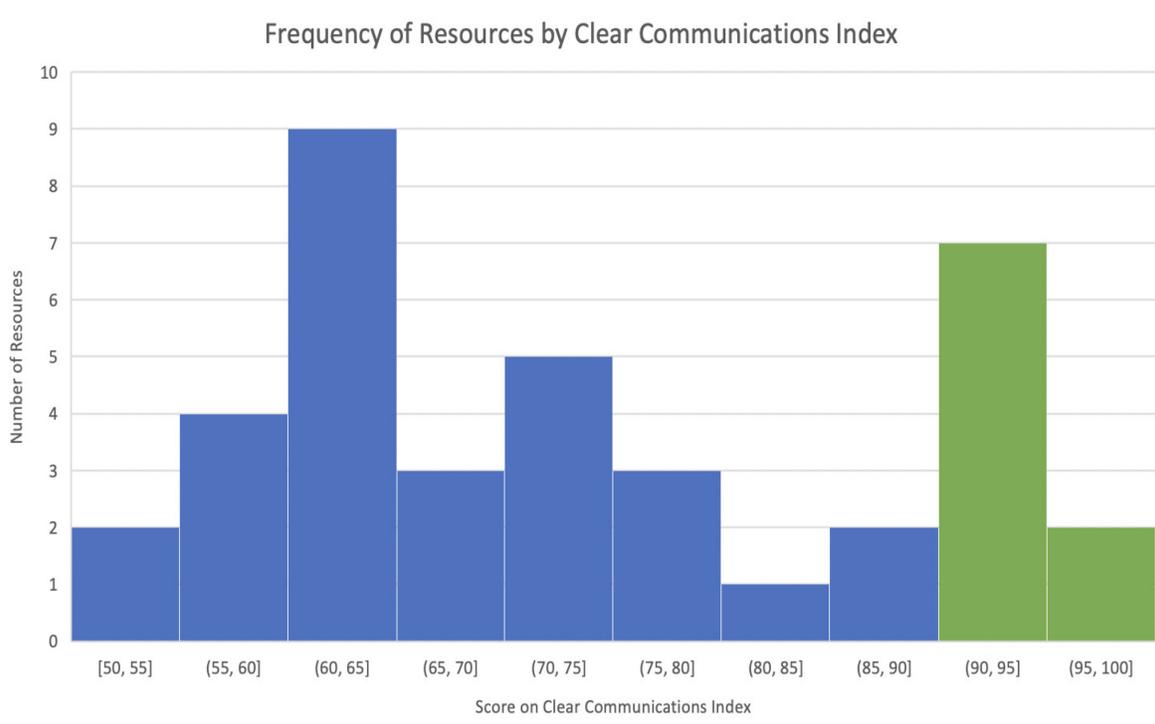


Figure 4. Frequency of Resources by Clear Communication Index Score.

On average, communication materials mentioning the risk of Zika virus and tactics to prevent transmission for expectant mothers scored 71 points on the CCI. This means that resources available to the target population did not meet the criterion of a score of 90 or above on the CCI and have room for improvement. Figure 4 shows the distribution of material scores determined through the CCI tool. The boxplot in Figure 5 visualizes the distribution of these resources into four separate quartiles, categorizing resources as very low quality, poor quality, fair quality, or passing.

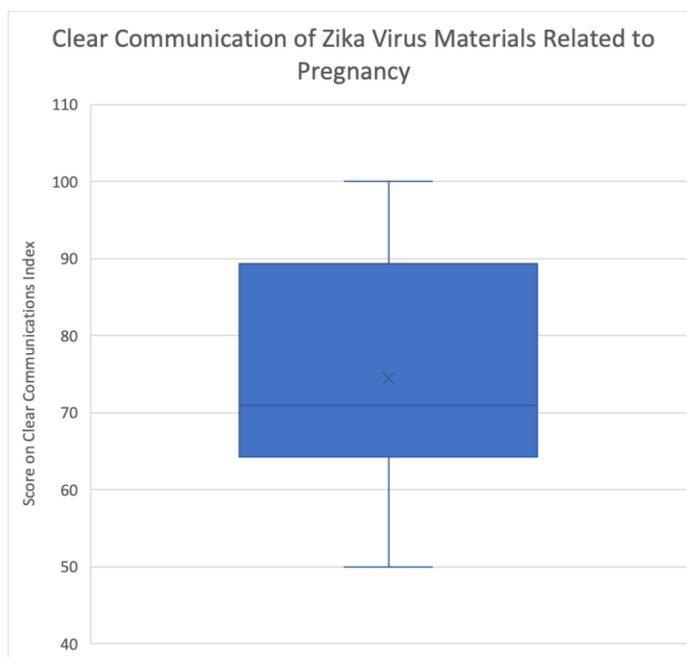


Figure 5. Clear Communication of Zika virus Materials Related to Pregnancy

Nearly 40% (n=15) of the materials available in the northeast region were considered low quality. The resource with the lowest score, (50/100 on the CCI) can be found in Appendix B. This text-heavy flyer was dense and written using public health jargon rather than everyday words which are understood by a wider audience. For example, terms like “transmission” were used rather than phrases such as “disease spread”, which requires a certain level of literacy and familiarity to public health language in order to interpret. In addition, this resource covered a wide array of topics, making it hard to summarize or find specific information without skimming the entire document. Few colors or images were embedded in the body of the text, which narrowly mentions pregnant women who are at an increased risk. Other resources mentioning Zika virus and the target population of pregnant travelers that scored in this quartile were also of very low quality and did not clearly communicate to their target populations.

Only three of the 38 (8%) resources scored between 65 and 71 on the CCI, representing the second quartile ‘poor quality’ of scored materials. The infographic titled *Zika Virus Travel Information for Pregnant Women and Women Trying to Become Pregnant* falls into this poor quality category [15]. This colorful file used layman's terms

for clear linguistic communication, but fell short of clear messaging by focusing on multiple topics. This material functioned more as a “catch-all” resource rather than one targeted towards pregnant travelers. Audience-targeted materials are more effective than those that are a conglomerate of information [1]. This material serves as an example for other resources that scored poorly on the index. The use of bullet points enhances the clarity of the information, and is a common feature of materials scoring within this quartile.

Eleven of the 38 (29%) materials scored under the ‘fair quality’ quartile, indicating a score that meets or lies above the average of 71 on the CCI, yet does not exceed the passing threshold of 90. An example material from this quartile scored 80 out of 100 on the CCI, using pictures and short phrases to convey a targeted message related to behavioral prevention of mosquito-borne disease. Unlike lower scoring materials, this resource focused on direct actions a traveler can take to prevent transmission rather than just informing the target population of their increased risk. The language was also more direct, and the images allowed for interpretation for populations across a wider range of literacy levels than those which only rely on text communication.

Roughly 24% (n=9) of the identified communication materials received a passing score of 90 or above. The highest-scoring material, which scored a perfect 100 out of 100 on the CCI, focused on promoting testing behavior for pregnant women who had recently traveled to areas which may have high incidence of Zika. The infographic directed patients toward specific action, testing for Zika virus, and pointed them to their health care provider for more information rather than adding additional language to the flyer. This kept the message concise and most effective. Other materials within this quartile followed a similar format of short, concise language presented in bullet points to a targeted audience.

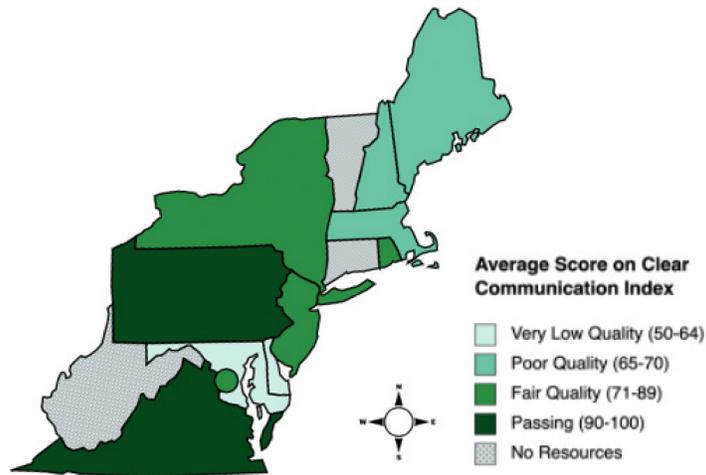


Figure 6. Map of the Northeast Region by average score on Clear Communication Index

The map in Figure 6 displays the average score of each state’s communication materials evaluated in this assessment. Maryland and Delaware had the lowest average scores on the CCI, while Maine, New Hampshire, and Massachusetts produced slightly more effective resources but remained below the average score of 71/100 and well below a passing score of 90/100 on the CCI. The states of New York, New Jersey, Rhode Island, along with the District of Columbia, provided fair quality resources to their constituents, yet their resources averaged below the passing mark of 90. Only Pennsylvania and Virginia consistently produced high quality materials. It is notable that states which scored in both the highest and lowest percentiles produced very few (1-2, respectively) total resources each, which may be why their scores differ so drastically from the average. States producing more resources tended to be in middle quartiles, closer to the average of 71/100 on the CCI. Refer to Table 1 for the average CCI score for materials produced by each state.

Discussion

Areas with higher prevalence of Zika virus or high travel volume from places with local Zika virus transmission should have high quality materials developed for pregnant travelers. The case count data made available by the CDC showed the highest rate of

local transmission was in the state of New York, which had 1069 cases during the outbreak and 13 cases in the years following. These figures are much higher than in neighboring northeast states, which fall below 200 cases each during the outbreak years and 10 cases in the years after, collectively [4]. Based on the travel data collected by Nelson et al., the state of New York also ranked second on the list of destination states and territories during the outbreak period and is the most travel-dense region in the NEVBD catchment area. Since the top origin cities match those with high Zika incidence, originating from countries such as Mexico, Puerto Rico, Dominican Republic, and Brazil [9], this state should have the highest frequency of materials that are of high quality. While this state produced more resources than other states, these resources only averaged an 82.9 on the CCI, falling just short of the required 90 score for effective communication materials. In order to meet the needs of their population with higher risk of Zika virus infection, New York should produce more targeted, high quality resources that score above 90 on the CCI.

New Jersey, Maryland, Massachusetts, and Pennsylvania had case counts between 100 and 200 and were also top 20 travel destinations in the United States during the outbreak period, suggesting an elevated need for high quality materials in these states [9]. Of this group, only Pennsylvania averaged a passing score on the CCI; this may be due to their small number of resources meeting inclusion criteria for this assessment. New Jersey produced the most resources (6 total) and scored an average of 71 on the CCI. Maryland's three resources scored as very low quality with an average of 57 on the same index. No materials meeting inclusion criteria were identified from Massachusetts, despite this state being a highly traveled destination [9].

Though some states produced highly effective materials, such as Virginia and Pennsylvania, the majority of states failed to produce tools meeting communication best practice standards as outlined through the CDC Clear Communication Index. The 31 resources related to Zika virus transmission targeting pregnant women that did not pass the CCI should be updated to better communicate their messaging. States that experienced over 100 cases during the outbreak years should consider developing

more than one high quality resource targeting the vulnerable population of expectant mothers as an initial step to meet the needs of their communities.

Limitations

This data may be limited as it only describes travel patterns in 2014, but has been extrapolated to represent travel patterns throughout the virus' outbreak. Patterns of travel may have changed due to traveler awareness or additional factors, changing which areas are considered travel-dense between 2014 and 2015, affecting the accuracy of the analysis. The Clear Communications Index also has limitations as an evaluation tool, as it focuses on text but vaguely defines the qualifications necessary for clear graphic communication. While the CCI quantifies the effectiveness of public health communication materials, it leaves room for subjectivity as each measure is rated by the measurer. Because of this, team members may have different interpretations of how each resource should be evaluated using this tool.

Conclusion

Zika virus is not the only disease which puts specific populations at risk through its mode of transmission. Other viruses in more recent years, such as SARS-CoV-2, have hit outbreak levels that surpass those experienced with Zika virus, further highlighting the need for higher-quality resources across diseases and targeted towards different populations. When creating resources for different populations, it is important to note the differences in access, culture, and understanding of risk that may already be barriers to preventive behavioral measures. Mitigating these barriers through inclusive communication is the first step to not only communicating across differences, but to improving the health outcomes of entire populations [1].

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Appendix A: Scope of Travel-Related Transmission

S1. Top 20 Destination States and U.S. Territories, Aviation Travel to the US from 33 Countries and U.S. Territories with Local Zika Transmission, 12 Month Estimate [9]¹

Destination City	Rank	Total Arrivals	% of Total Arrivals	Cumulative %
Florida	1	7,684,700	22.4%	22.4%
New York	2	4,975,085	14.5%	36.9%
California	3	4,446,465	13.0%	49.8%
Texas	4	2,708,759	7.9%	57.7%
Illinois	5	1,543,699	4.5%	62.2%
New Jersey	6	1,404,823	4.1%	66.3%
Washington, DC	7	1,268,922	3.7%	70.0%
Massachusetts	8	1,003,836	2.9%	72.9%
Georgia	9	837,141	2.4%	75.4%
Pennsylvania	10	710,756	2.1%	77.4%
Nevada	11	696,790	2.0%	79.5%
Colorado	12	591,826	1.7%	81.2%
Michigan	13	551,725	1.6%	82.8%
North Carolina	14	513,143	1.5%	84.3%
Maryland	15	465,592	1.4%	85.6%
Ohio	16	463,463	1.3%	87.0%
Minnesota	17	457,668	1.3%	88.3%
Puerto Rico	18	432,155	1.3%	89.6%
Missouri	19	408,274	1.2%	90.8%
Arizona	20	338,893	1.0%	91.8%
	Other (n=36)	2,830,640	8.2%	100%
	Grand Total	34,334,355	100%	

¹ Data collected between 2014 and 2016, from *Travel Volume to the United States from Countries and U.S. Territories with Local Zika Virus Transmission* [9]

S2. Top 20 Origin Cities, Aviation Travel to the U.S. from 33 Countries and 3 U.S. Territories with Local Zika Transmission, 12 Month Estimate [9]²

Origin City	Number	Total Arrivals	% of Total Arrivals	Cumulative %
Cancun, Mexico	1	3,924,639	11.4%	11.4%
San Juan, Puerto Rico	2	3,280,444	9.6%	21.0%
Mexico City, Mexico	3	2,397,548	7.0%	28.0%
Guadalajara, Mexico	4	1,415,112	4.1%	32.1%
Punta Cana, Dominican Republic	5	1,398,157	4.1%	36.2%
Sao Paulo, Brazil	6	1,355,422	3.9%	40.1%
Montego Bay, Jamaica	7	1,247,612	3.6%	43.7%
San Jose del Cabo, Mexico	8	1,218,752	3.5%	47.3%
Santo Domingo, Dominican Republic	9	1,012,296	2.9%	50.2%
San Jose, Costa Rica	10	968,676	2.8%	53.1%
Puerto Vallarta, Mexico	11	881,713	2.6%	55.6%
Bogota, Colombia	12	795,299	2.3%	57.9%
Oranjestad, Aruba	13	731,819	2.1%	60.1%
St. Thomas, USVI	14	642,083	1.9%	61.9%
Guatemala City, Guatemala	15	630,204	1.8%	63.8%
San Salvador, El Salvador	16	619,973	1.8%	65.6%
Santiago, Dominican Republic	17	614,745	1.8%	67.4%
Port Au Prince, Haiti	18	519,743	1.5%	68.9%
Monterrey, Mexico	19	502,449	1.5%	70.4%
Rio De Janeiro, Brazil	20	480,758	1.4%	71.8%
	Other (n=273)	9,696,911	28.2%	100%
	Total	34,334,355	100%	

² Data collected between 2014 and 2016, from *Travel Volume to the United States from Countries and U.S. Territories with Local Zika Virus Transmission* [9]

Appendix B: Example Resources

S3. Score of 50/100 on Clear Communication Index [7]



DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health



DELAWARE DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

Updated 10/06/2016

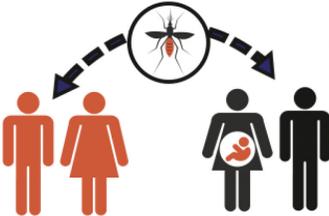


Frequently Asked Questions: Zika Virus

Q: What is Zika virus disease (Zika)?
A: Zika is a generally mild illness. Symptoms typically last for several days to a week.

Q: What are the symptoms of Zika?
A: The most common symptoms of Zika virus disease are fever, rash, joint pain, or conjunctivitis (red eyes). Symptoms typically begin two to seven days after being bitten by an infected mosquito. About one in five people infected with Zika will get sick.

Q: How is Zika transmitted?
A: Zika is primarily transmitted through mosquito bite when the mosquito bites a person already infected with the virus and then bites someone else. The virus also can be spread during sexual activity by a male or female partner. There is no evidence that Zika can be spread through casual contact like kissing, hugging, etc. The virus can also be transmitted from a pregnant mother to her baby during pregnancy or around the time of birth. We do not know how often Zika is transmitted from mother to baby during pregnancy or around the time of birth.



Q: Who is at risk of being infected?
A: Anyone who is living in, or traveling to, an area where Zika virus transmission is currently occurring, or men and women who have sexual partners who have traveled to these areas.

Q: What major health problems are linked to Zika?
A: Zika is generally a mild illness. There have been very few reports of potential links to Guillain-Barré syndrome (GBS); however, it is not yet known if Zika virus infection causes GBS. The largest health impact of the Zika virus appears to be on infants whose mother was infected during pregnancy. There have been reports of a serious birth defect of the brain called microcephaly, a condition in which a baby's head is smaller than expected when compared to babies of the same sex and age, as well as other poor pregnancy outcomes in babies of mothers who were infected with Zika virus while pregnant.

Q: What are the travel recommendations related to Zika virus?
A: Women who are pregnant are advised to postpone travel to the areas where Zika virus transmission is ongoing. Women, and their partners, who are trying to become pregnant should talk to their doctor before they travel about their plans to become pregnant and the risk of Zika virus. If a woman who is pregnant or may become pregnant must travel to one of these areas, she should talk to her doctor first and strictly follow steps to prevent mosquito bites and sexual transmission of Zika during her trip. Women who traveled to an area with active Zika virus transmission up to eight weeks before their pregnancy was confirmed should discuss their travel history with their doctor.

Q: What are the recommendations to avoid sexual transmission of Zika if I am, or am trying to become, pregnant?
A: Women who are pregnant whose male or female sexual partner has traveled to, or lives in, an area with active Zika virus transmission are advised to use barrier methods every time they have sex or they should not have sex during the duration of the pregnancy. Condoms and/or dental dams should be used during oral sex and condoms should be used for sex involving penetration. Discuss your and your partner's potential exposures and history of Zika-like illness with your doctor.
Women who have had possible Zika virus exposure through travel or sexual contact, regardless of whether or not they have had symptoms, should wait at least eight weeks before trying to get pregnant in order to minimize risk. Men with possible Zika virus exposure through travel or sexual contact should wait at least six months before attempting conception with their partner.

Q: What are the recommendations to avoid sexual transmission of Zika if pregnancy is not a factor?
A: Men and women may transmit Zika during sexual activity. Couples that include at least one partner who had possible Zika virus exposure through travel or sexual contact should use condoms and/or dental dams correctly and consistently for at least six months for men and eight weeks for women. Preventing Zika transmission to a woman who may, or is planning to, conceive in the next few months is particularly important.



Information about the Zika virus is evolving. For the latest information, visit www.dhss.delaware.gov/dhss/dps/zika.html or <http://www.cdc.gov/zika/>, or call the DPH Office of Infectious Disease Epidemiology at 888-295-5156.



Delaware Mosquito Control:

What residents need to know about mosquitoes and Zika virus

Q: Is the mosquito species that carries the Zika virus, *Aedes aegypti*, found in Delaware? What other mosquito species found in Delaware could carry the Zika virus?

A: Rarely. In the United States, these mosquitoes are common only as far north as South Carolina. *Aedes albopictus*, the invasive Asian tiger mosquito, is a common backyard biting mosquito in Delaware. Asian tiger mosquitoes are related to the primary Zika carrier, *Aedes aegypti*, and have already been documented as a Zika carrier in Africa. Asian tiger mosquitoes also carry West Nile in the U.S., including Delaware.

Q: What can be done to reduce the number of backyard mosquitoes that could carry the Zika virus?

A: During mosquito season, residents are strongly encouraged to reduce backyard mosquito-producing habitat by cleaning clogged rain gutters, draining abandoned swimming pools and most importantly emptying standing water from any and all containers such as scrap tires, cans, flower pot liners, unused water cisterns, upright wheelbarrows, uncovered trash cans, depressions in tarps covering boats or other objects stored outside. Water in birdbaths or outdoor pet dishes should be changed often.

Q: What should I do to prevent mosquito bites if I am spending long periods outdoors?

A: The best way to prevent mosquito bites is to use Environmental Protection Agency (EPA) registered insect repellents; stay in places with air conditioning or that use window or door screens to keep mosquitoes outside; sleep under a mosquito bed net if you are outside and not able to protect yourself from mosquitoes; treat clothing and gear with permethrin or purchase permethrin-treated items; and wear long-sleeved shirts and long pants.

Q: How are mosquitoes that can carry Zika monitored and identified in Delaware?

A: DNREC's Mosquito Control monitors adult mosquitoes via a statewide network of light trap monitoring stations, sampled twice or more weekly from about mid-May to late September. Mosquito Control also can collect and identify adult mosquitoes while performing adult landing rate counts.

Q: What's done in Delaware to reduce mosquito populations that could transmit disease?

A: Mosquito Control uses EPA-approved insecticides that pose no unreasonable risks to human health, wildlife or the environment. These are applied by aircraft over larger areas and by truck to neighborhoods reporting intolerable numbers of biting mosquitoes. If *Aedes aegypti* becomes established in Delaware, or if Zika is found in local mosquito populations, DNREC's Mosquito Control will use a combination of larvicide and adulticide along with promoting good water sanitation to treat affected areas. Due to certain adult behaviors and where they deposit their eggs, Asian tiger mosquitoes can be difficult to control with insecticides alone, making the elimination of standing water to reduce larvae habitat even more important.

Q: How can residents contact Delaware Mosquito Control to report intolerable numbers of biting mosquitoes in their neighborhood?

A: Call Mosquito Control's field offices between 8:00 a.m. and 4:00 p.m., Monday through Friday:

- New Castle County and northern Kent County from Dover north, call 302-836-2555.
- Remainder of southern Kent County and all of Sussex County, call 302-422-1512.

For more information about mosquitoes in Delaware, call 302-739-9917, or visit www.dnrec.delaware.gov/fw/mosquito/Pages/MC-Diseases.aspx.



Zika Virus Travel Information for Pregnant Women and Women Trying to Become Pregnant

Pregnant?

Avoid travel to areas with the Zika virus.

If you have a male sex partner who lives in or travels to an area with Zika, you should use condoms the right way every time you have sex, or do not have sex during your pregnancy.



Pregnant women and their male partners should strictly follow steps to prevent mosquito bites if traveling to an area with Zika.

If you or your partner develop symptoms of Zika, see a healthcare provider right away.

Trying to become pregnant?

Avoid travel to areas with the Zika virus.

Talk to your healthcare provider about plans to become pregnant if you have a male sex partner who lives in or travels to an area with Zika.

Women trying to become pregnant and their male partners should strictly follow steps to prevent mosquito bites if traveling to an area with Zika.

If you or your partner develop symptoms of Zika, see a healthcare provider right away.



If you must travel to an area with Zika, protect against mosquito bites.

REPELLENT

When used as directed, insect repellents are safe and effective for pregnant and breastfeeding women.



- Always follow the product label instructions.
- Reapply as directed.
- If you are also using sunscreen, apply sunscreen before applying insect repellent.
- Use a repellent with one of the following active ingredients: DEET (at least 20% strength); picaridin; IR3535; and oil of lemon eucalyptus or para-menthan-diol.

CLOTHING

- Wear long-sleeved shirts and long pants.
- Treat clothing with permethrin or purchase permethrin-treated items.
 - Treated clothing remains protective after multiple washings. See product information to learn how long the protection will last.
 - When used as directed, permethrin is safe for pregnant and breastfeeding women.
 - If treating items yourself, follow the product instructions carefully.
- Do NOT use permethrin products directly on skin. They are intended to treat clothing.

INDOOR PROTECTION

- Stay in places with air conditioning or that use window and door screens to keep mosquitoes outside.
- Sleep under a mosquito bed net if air-conditioned or screened rooms are not available or if sleeping outdoors.

www.health.ri.gov/zika
Health Information Line 401-222-5960 / RI Relay 711



What You Should Know About Zika

- Zika virus is spread primarily through the bite of an infected mosquito.
- Zika can also be spread by a man to his sex partners.
- Zika can be passed from a pregnant woman to her fetus.
- Infection with Zika during pregnancy is linked to birth defects in babies.
- There is no vaccine to prevent or medicine to treat Zika.
- Women who are pregnant, or **trying** to become pregnant, should not travel to areas with Zika.

Symptoms of Zika

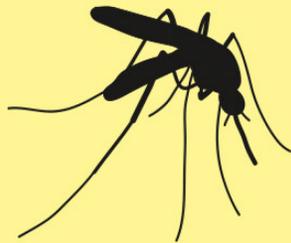
Most people with Zika won't even know they have it. The illness is usually mild with symptoms lasting for several days to a week.

The most common symptoms of Zika are:

- Fever
- Rash
- Joint Pain
- Conjunctivitis (red eyes)

For a current list of places with Zika outbreaks, see CDC's Travel Health Notices:

<http://wwwnc.cdc.gov/travel/page/zika-travel-information>



www.health.ri.gov/zika
Health Information Line 401-222-5960 / RI Relay 711



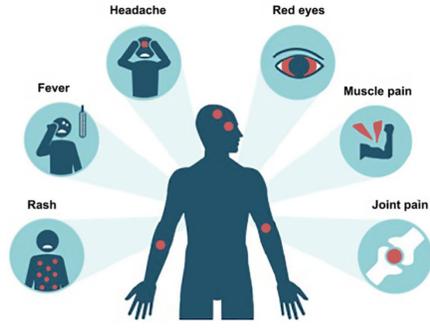
S5. Score of 80/100 on Clear Communication Index [10]

NJ Health  **Mosquito-borne Disease: Track When You're Back**

Even if you don't feel sick, travelers returning to New Jersey from an area with mosquito-borne disease should take steps back home to prevent the spread of disease. **Track time and symptoms when you're back** if you traveled to an area with Zika, chikungunya, dengue, malaria, yellow fever or any other mosquito-borne disease.

For more information on mosquito-borne disease, a list of affected areas and maps, visit: www.cdc.gov/features/stopmosquitoes and wwwnc.cdc.gov/travel/notices.

✓ Avoid mosquito bites for 3 weeks ✓ Check for symptoms of illness ✓ Feel sick? Seek medical care

<p>Empty/change outdoor standing water weekly</p>   <p>Use window and door screens</p>   <p>Wear long-sleeved shirts and pants</p> <p>Apply EPA-registered insect repellent</p>		<p>Call a healthcare provider and mention travel</p>   <p>Get rest</p>   <p>Drink water and stay hydrated</p> <p>Get tested based on symptoms or risk</p>
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Avoiding mosquito bites back home helps reduce the spread of disease to local NJ mosquitoes which may infect other people. Common symptoms for mosquito-borne disease include fever, joint pain, muscle pain, rash and conjunctivitis (red eye). If you feel sick after traveling, visit a healthcare provider right away, mention where you recently traveled, and get tested.

Special precautions if you traveled to an area with Zika virus

Zika travel information is available at: wwwnc.cdc.gov/travel/page/zika-travel-information

- If you're pregnant, discuss your travel history, Zika virus risk, and testing options with a healthcare provider as soon as you can after travel
- Zika can be passed through unprotected sex (vaginal, anal and oral sex, and the sharing of sex toys), even if the infected person does not have symptoms
- Zika virus infection during pregnancy can cause birth defects
- Discuss pregnancy plans and birth control options with a healthcare provider

 <p>Protect your partner</p> <p>Use condoms and do not share sex toys to reduce the chance of giving Zika to your partner through unprotected sex.</p>	 <p>Protect your unborn child</p> <p>If your partner is pregnant, use condoms correctly during sex or do not have sex for the entire pregnancy.</p>	 <p>Wait to become pregnant</p> <p>Men: use condoms or do not have sex for 3 months after travel. Women: use condoms or do not have sex for 2 months after travel.</p>
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C2875 Adapted from the Centers for Disease Control and Prevention Revised 6/19



ZIKA

DO I NEED TO GET TESTED?

Most people **DO NOT** need to get tested for Zika virus, even if they traveled to a place where Zika is spreading.

Some pregnant women should get tested because Zika causes birth defects. A test can show if someone has been infected with Zika, even if the person doesn't feel sick.

CONTACT A HEALTH CARE PROVIDER TO DISCUSS ZIKA TESTING IF:

- 1.** You are pregnant and spent time in a Zika-affected area while pregnant.
- 2.** You are pregnant and, while pregnant, had unprotected* vaginal, anal or oral sex with a person who has or might have Zika.

Zika testing usually involves giving samples of your urine and blood. **If the test shows you have been infected with Zika, you may need more tests during your pregnancy.**

DO NOT travel to a Zika-affected area while pregnant or trying to conceive.
Find information about Zika, including travel warnings and alerts, at nyc.gov/health/zika

If you need help finding a City-run hospital or clinic near you, call 311.
Hospital staff will not ask you about immigration status. You will be seen regardless of ability to pay.

NYC Health
Bil de Blasio
Mayor
Mary T. Bassett, MD, MPH
Commissioner

*"Unprotected" means sex without barrier protection, like male condoms, female condoms and/or dental dams.