




## Epidemiology of Tuberculosis (TB): Global, National, and Tri-State (Indiana, Michigan, and Ohio)

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## Global TB Epidemiology

- TB is the ninth leading cause of death worldwide and the leading cause from a single infectious agent, ranking above HIV/AIDS.
- An estimated 10.4 million people fell ill with TB in 2016: 90% were adults, 65% were male, 10% were people living with HIV (74% in Africa) and 56% were in five countries: India, Indonesia, China, the Philippines and Pakistan.

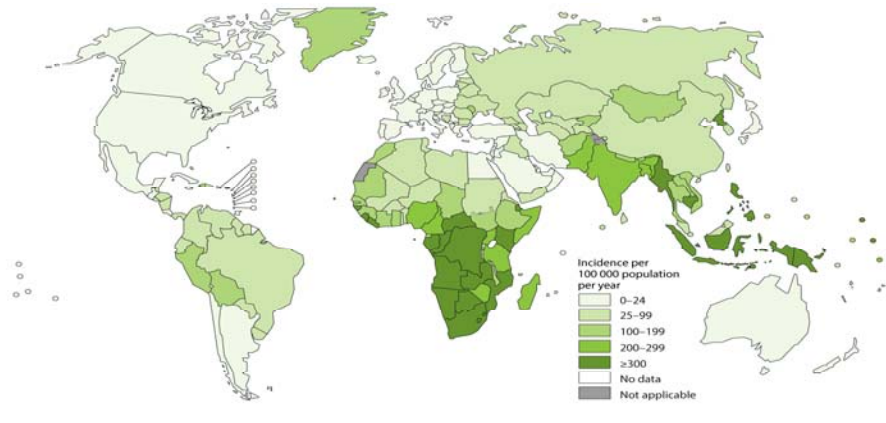


## Global TB Epidemiology

- In 2016, over 490,000 new MDR-TB cases reported globally
- Almost half (47%) of new MDR-TB cases in 2016 were reported in India, Philippines, and Russian Federation



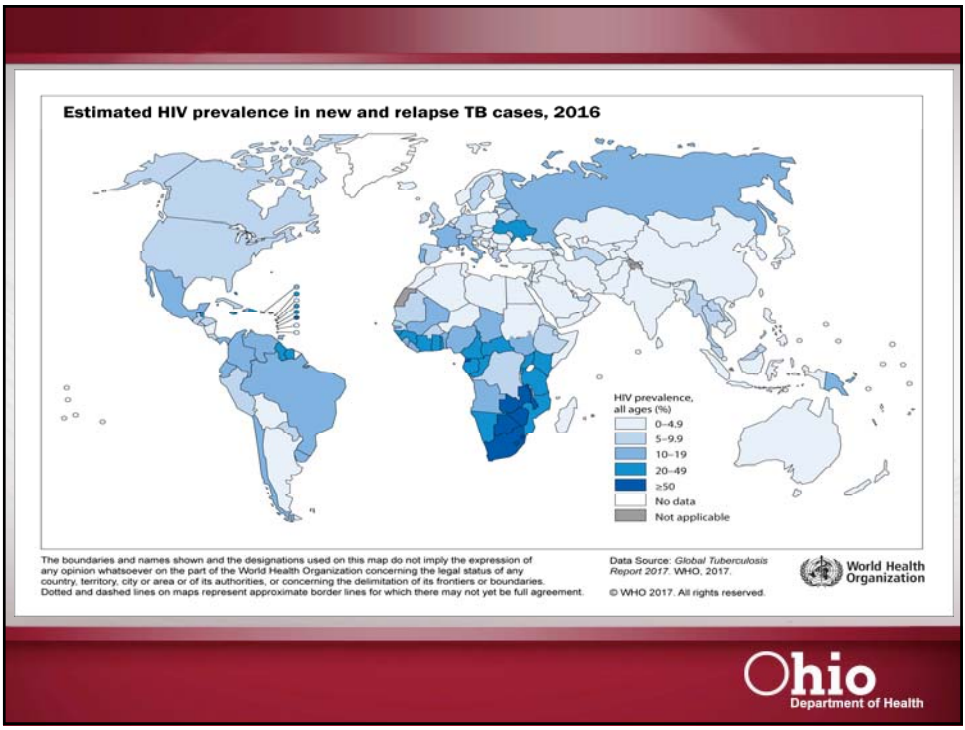
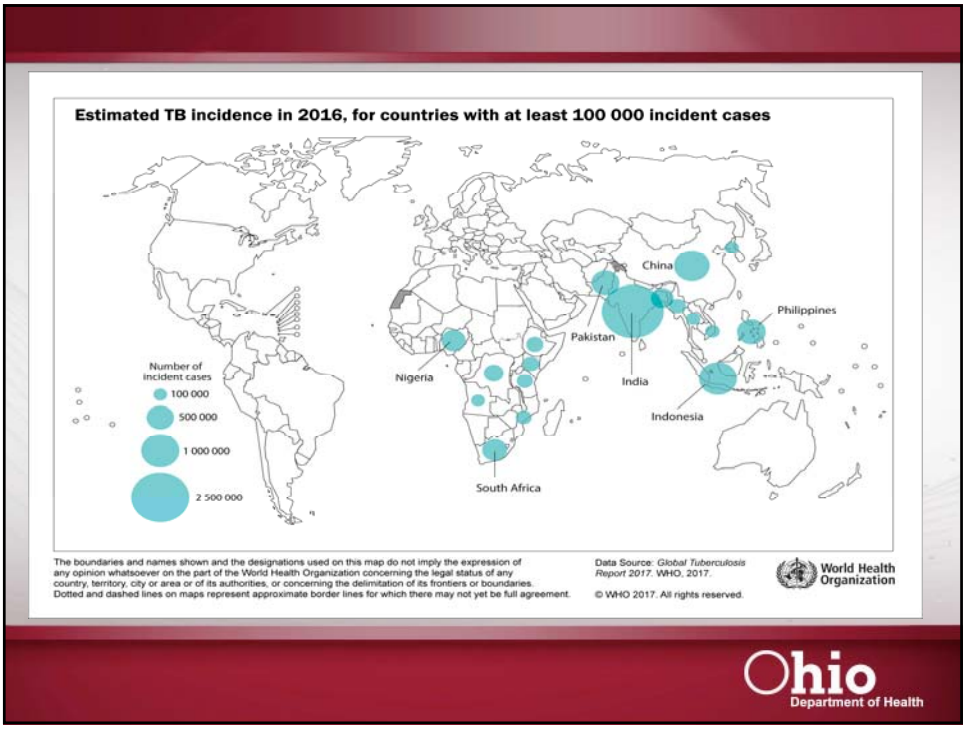
Estimated TB incidence rates, 2016

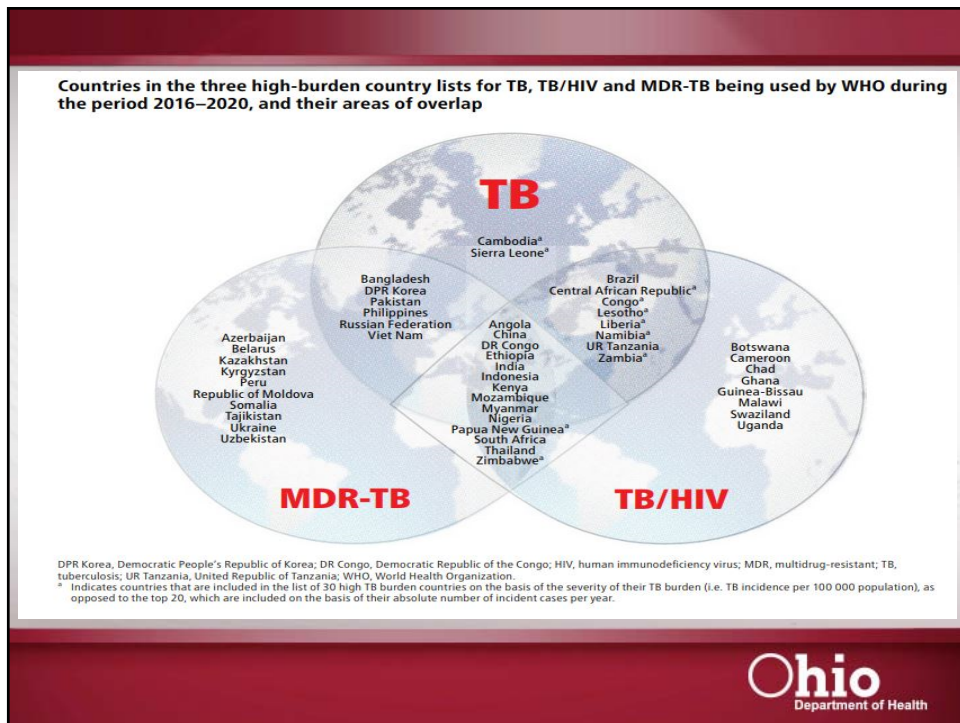
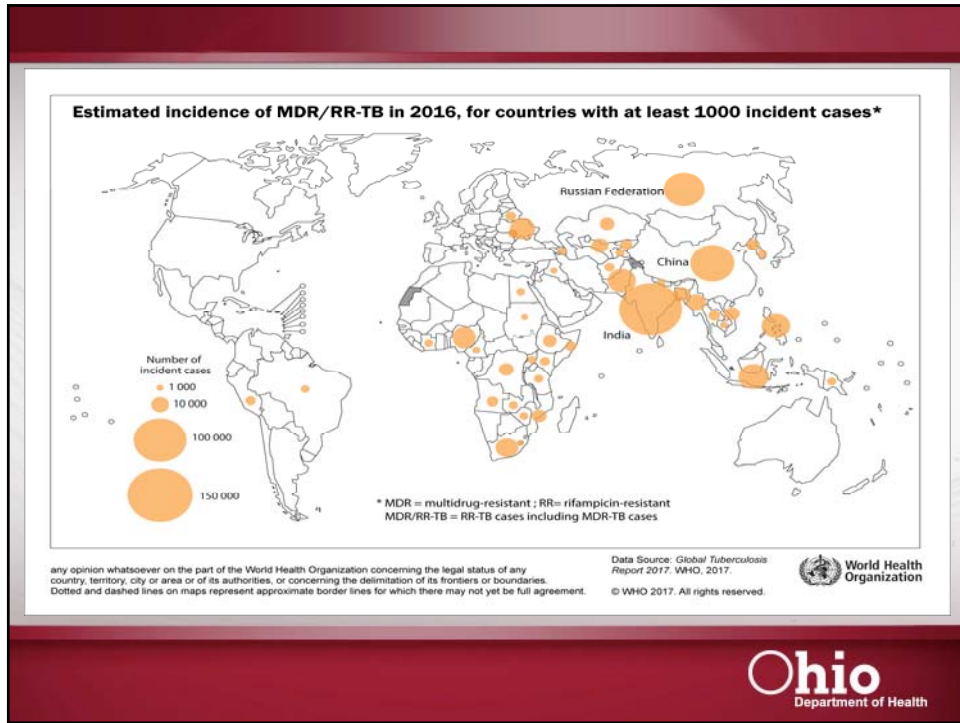


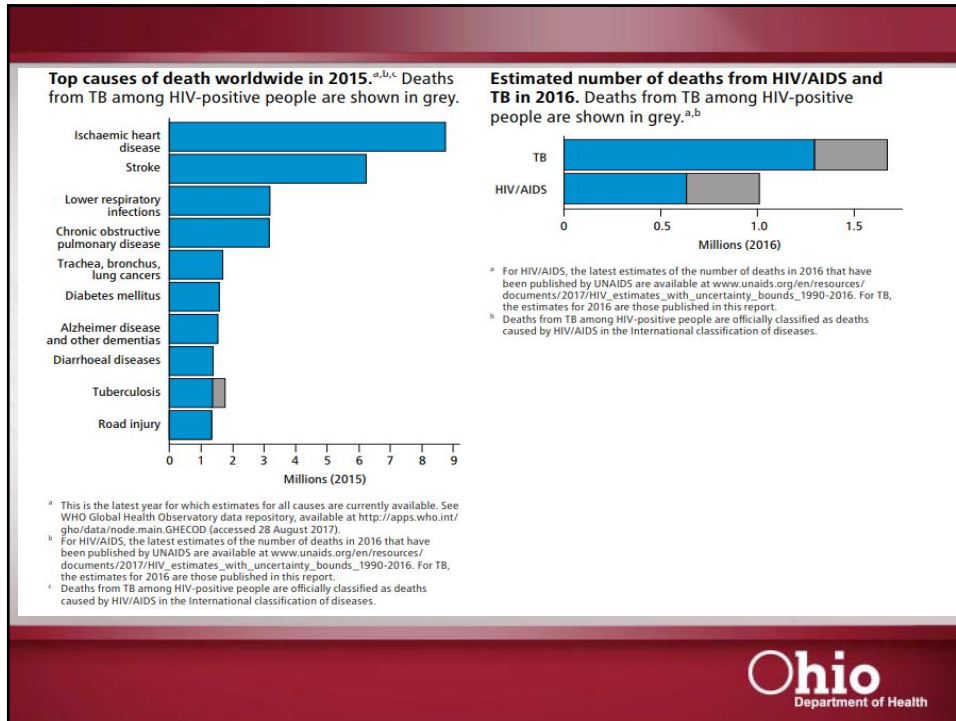
The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

Data Source: *Global Tuberculosis Report 2017*. WHO, 2017.  
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## 2017 TB Epidemiology-U.S.

- 9,093 TB cases reported in 2017
- 2.8 cases per 100,000 population
- Rate decreased by 2.5% compared to 2016
- The rate of TB among persons born outside the U.S. in 2017 was 15 times the rate among U.S.-born persons

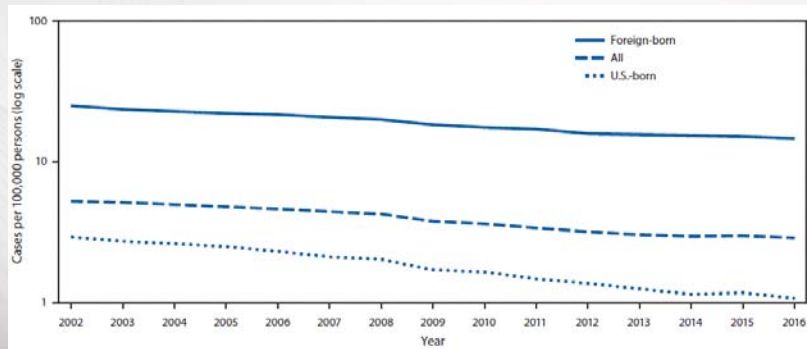
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## 2017 TB Epidemiology-U.S.

- Highest TB rate among persons born outside the U.S. was among Asians (27.0 per 100,000 persons)
- Among U.S. born persons, highest proportion of TB cases were reported among blacks (37.1%)



## Tuberculosis (TB) Incidence Overall and Among U.S.-Born and Persons Born outside the U.S.



Source: <https://www.cdc.gov/mmwr/volumes/66/wr/mm6611a2.htm>

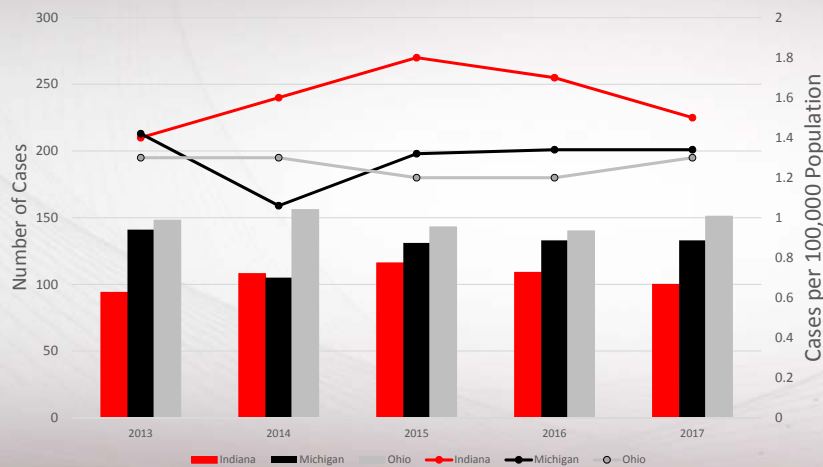


## 2017 TB Epidemiology – Tri-State

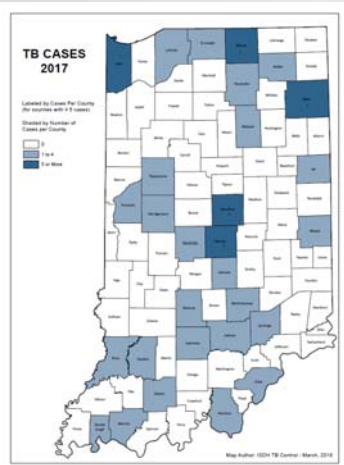
- | Indiana   | Michigan  | Ohio  |
|---|---|---|
| <ul style="list-style-type: none"> <li>100 cases                             <ul style="list-style-type: none"> <li>1.5 per 100,000</li> </ul> </li> <li>72% Pulmonary</li> <li>72% Lab-Confirmed</li> <li>Highest Burden: 37 cases in Marion (Indianapolis)</li> </ul> | <ul style="list-style-type: none"> <li>133 cases                             <ul style="list-style-type: none"> <li>1.3 per 100,000</li> </ul> </li> <li>50% Pulmonary</li> <li>68% Lab-Confirmed</li> <li>Highest Burden: 43 cases in Wayne (Detroit)</li> </ul> | <ul style="list-style-type: none"> <li>151 cases                             <ul style="list-style-type: none"> <li>1.3 per 100,000</li> </ul> </li> <li>68% Pulmonary</li> <li>48% Lab-Confirmed</li> <li>Highest Burden: 53 cases in Franklin (Columbus)</li> </ul> |



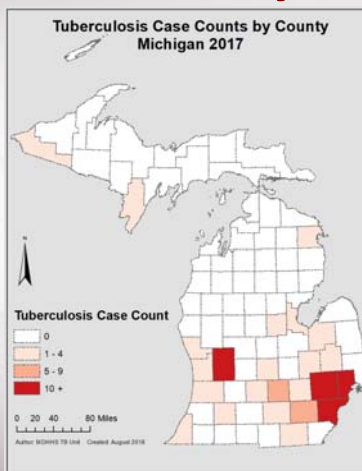
## TB Cases and Rates, 2013-2017



## Indiana TB Cases by County, 2017

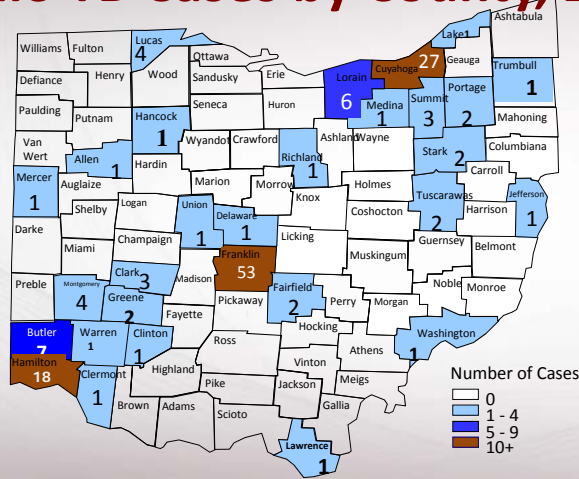


## Michigan TB Cases by County, 2017

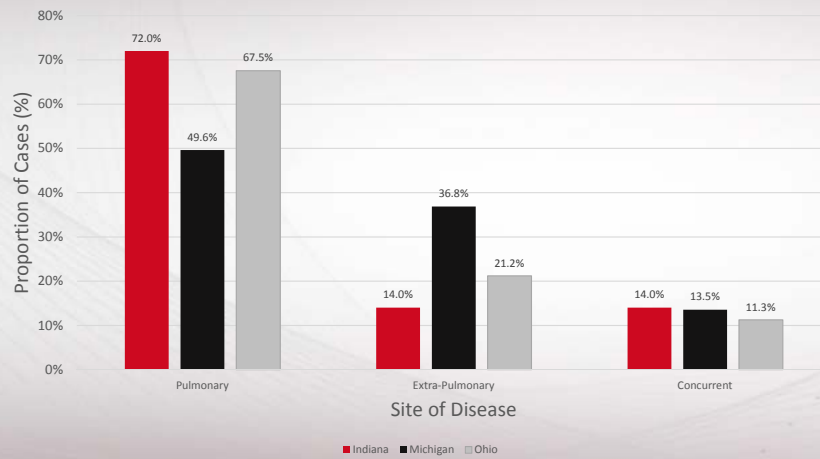




# Ohio TB Cases by County, 2017



# TB Cases by Site of Disease, 2017

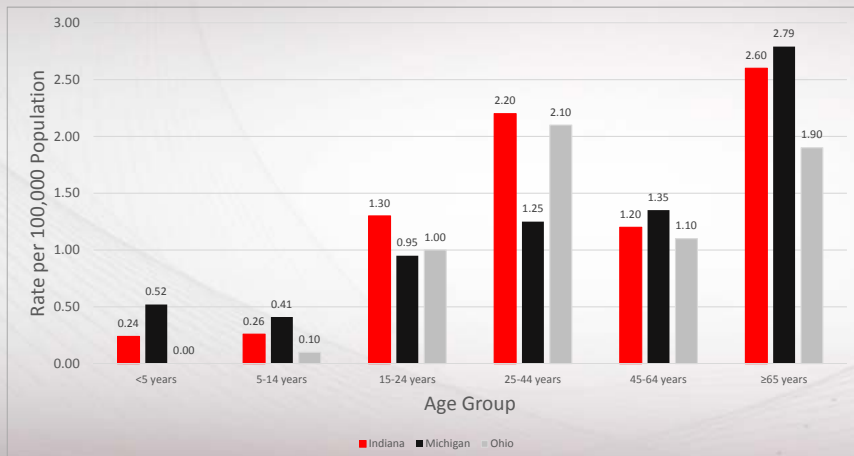


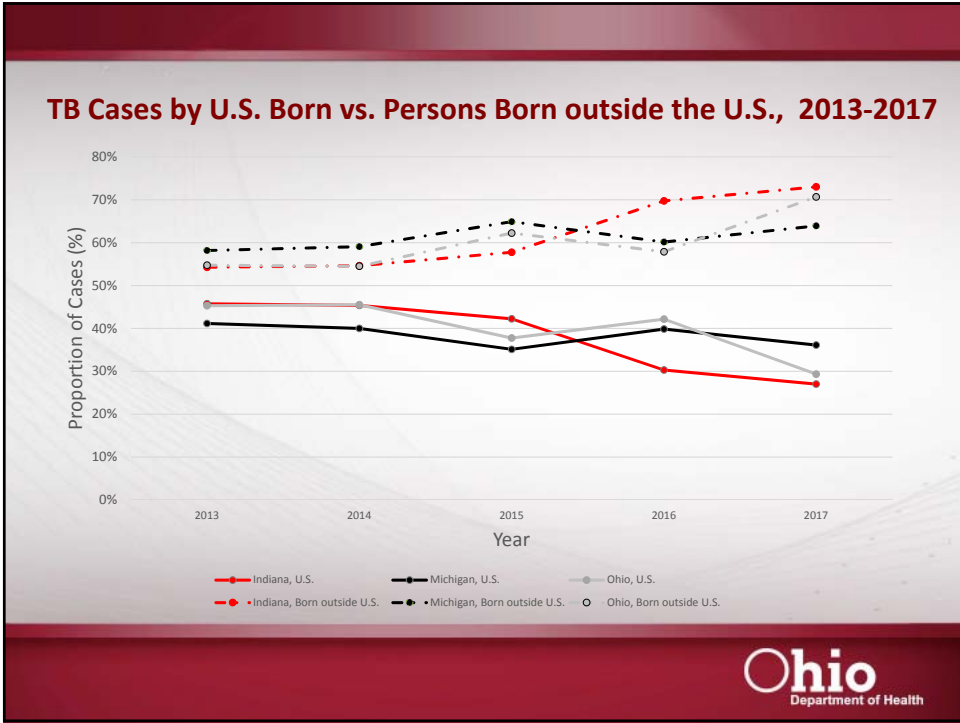
## Contact Investigations, 2017

	Indiana	Michigan	Ohio
Number of Sputum-Smear Positive Cases	35	52	50
Number of Contacts	387	827	901
Number of Contacts w/ TB Disease	4	6	3
Number of Contacts w/ LTBI	88	63	63



## TB Case Rates by Age Group, 2017

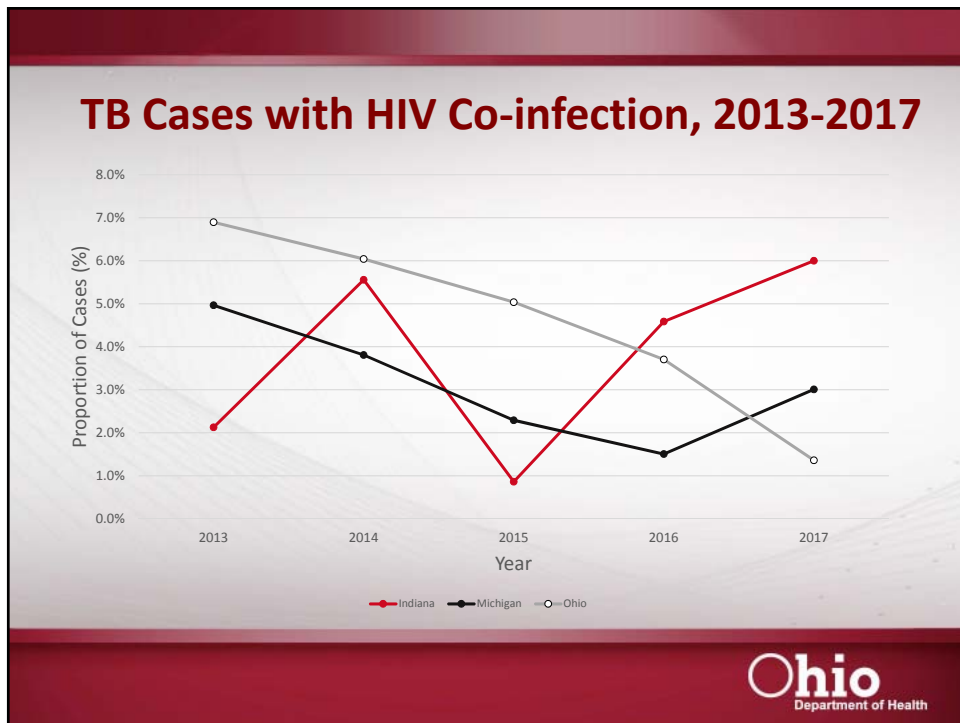
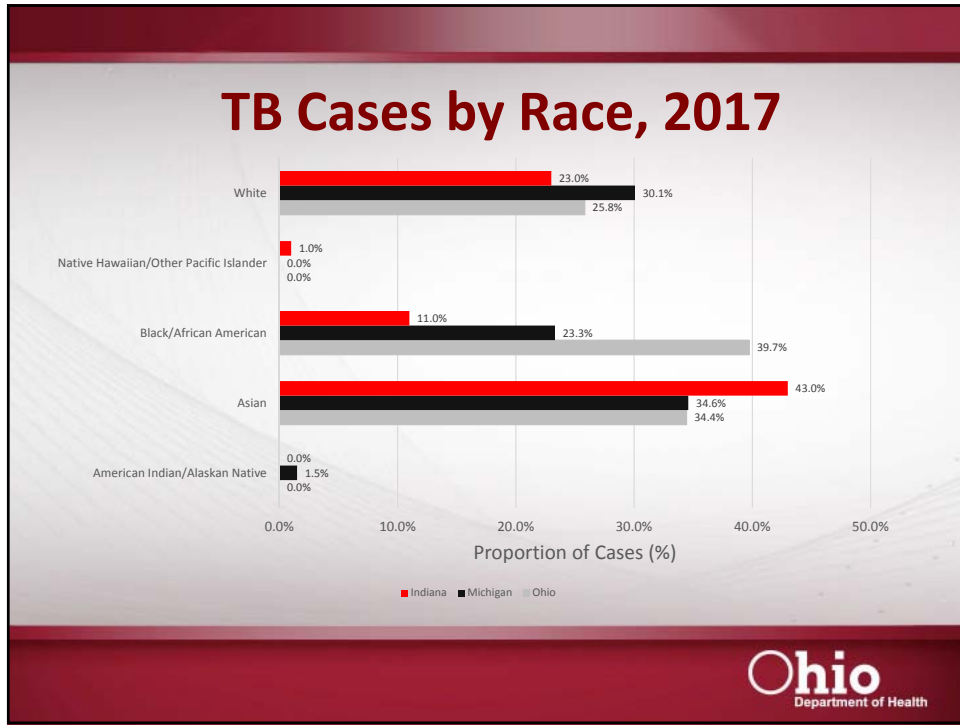




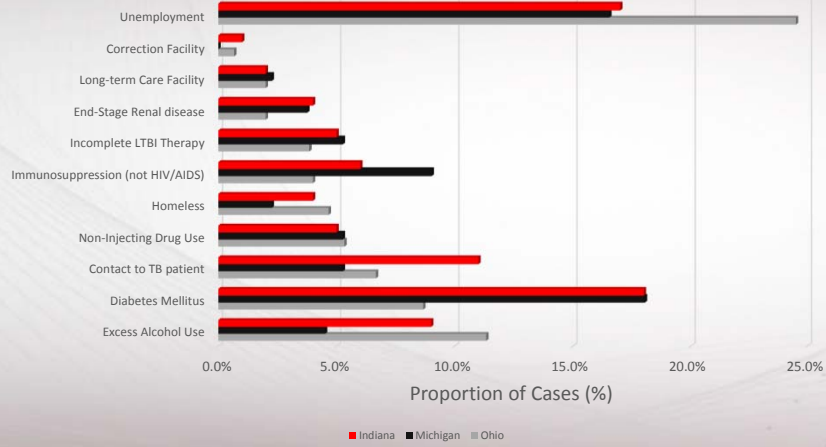
### Top 6 Countries of Birth for TB Cases, 2017

Indiana	Michigan	Ohio
United States – 27	United States – 48	United States – 44
Burma – 17	India – 13	Somalia – 17
Mexico – 12	Mexico – 7	Bhutan – 12
India – 9	Philippines – 6	India – 11
Philippines – 6	Vietnam – 6	Vietnam – 9
El Salvador – 4	Laos – 5	China/Philippines – 6

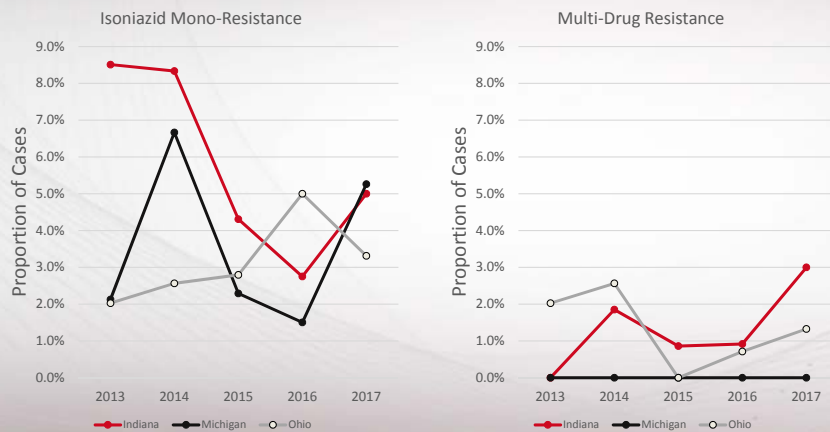
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## Risk Factors Among TB Cases, 2017



## Drug Resistance Among TB Cases, 2013-2017



## Conclusions

- Ohio has the highest number of cases, but Indiana has the highest rate
- Highest burden groups are similar among all three states
  - Persons born outside the U.S.
  - Pulmonary
  - ≥ age 65 (previous years had 25-44 as highest burden)
- Contact investigation data nearly identical for Ohio and Michigan, very different for Indiana
- Most common risk factors:
  - Unemployment
  - Diabetes
  - Excess alcohol use
- HIV co-infection cases increased for Indiana and Michigan; remains low, but still concerning
- Proportion of drug resistance increased in all three states
  - Indiana – mono-resistance and multi-drug resistance
  - Michigan – mono-resistance
  - Ohio – multi-drug resistance



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