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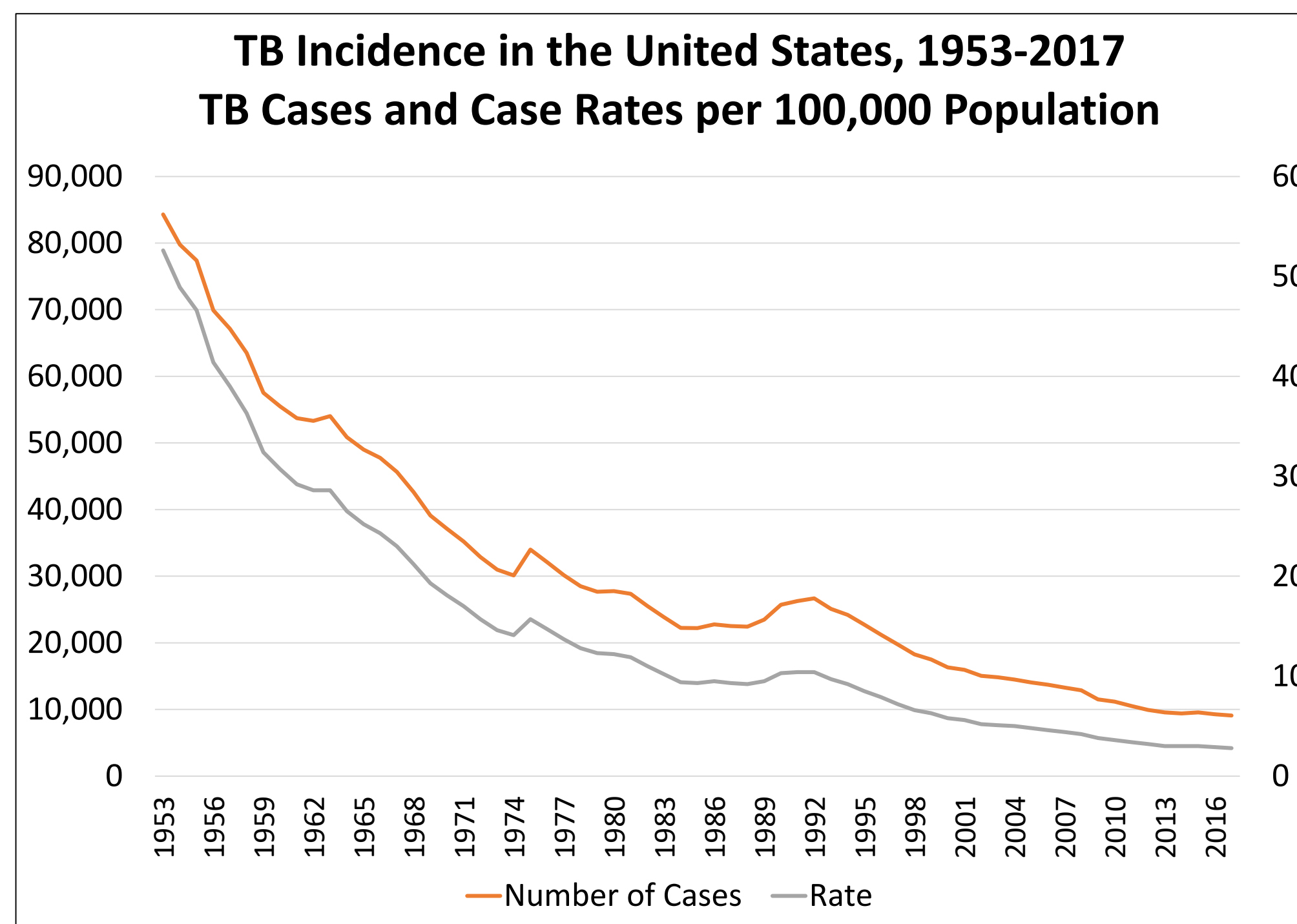
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Financial and Labor Benefits of the Individual TB Risk Assessment Model for Annual TB Screening

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Abstract

TB rates are at an all time low in the U.S. and serial TB testing is inefficient and burdensome.



Here we describe a model to guide TB screening based on occupational and non-occupational risk. Facility-level risk is taken into account only to drive policy. This methodology will reduce the cost and labor burden of TB screening.

Introduction

Since 1991, U.S. tuberculosis (TB) rates have declined, including among health care personnel (HCP). Non-U.S. born persons accounted for approximately two thirds of cases. Serial TB testing has limitations in populations at low risk, it is expensive, and labor intensive.

Methodology

1. New healthcare personnel are screened upon hire using IGRA testing.
2. Annual facility-level risk assessment determines the facility is generally at low or medium risk. Conversions average 3 per year.
3. All IGRA positive employees that were previously unknown are assessed for occupational and non-occupational risk factors.

New Hire TB Screening				
Year	Positive IGRA at Hire	Previously Unknown	Total New Hires	% Positive of Previously Unknown
2018	12	12	2444	0.49%
2019	17	13	3152	0.41%

Methodology

Annual TB Screening			
Year	Conversions	Total Employees	% Converted
2018	3	12,001	0.02%
2019	3	13,154	0.02%

4. Develop a list of high risk job categories based on facility risk assessment and assessment of IGRA test results from new hire and annual screening.

Job Codes with Potential Occupational Risk Annual TB Screening Required

- Respiratory therapy
- Co-workers performing bronchoscopy
- Pathology
- Micro & pathology laboratory staff
- In-patient Rehab staff
- Home Health staff
- Community Nursing (frequent correctional facilities, long term care facilities, homeless shelters)
- Firstcare Walk In Clinic staff
- Pulmonology
- Infectious Disease
- Emergency Department staff
- EMS & Flight Crew

5. Non-occupational risk assessment taken from "Tuberculosis Screening, Testing, and Treatment of U.S. Health Care Personnel: Recommendations from the National Tuberculosis Controllers Association and CDC, 2019".

Co-workers that answer "yes" to any of the following statements should discuss their risk with their primary care provider:

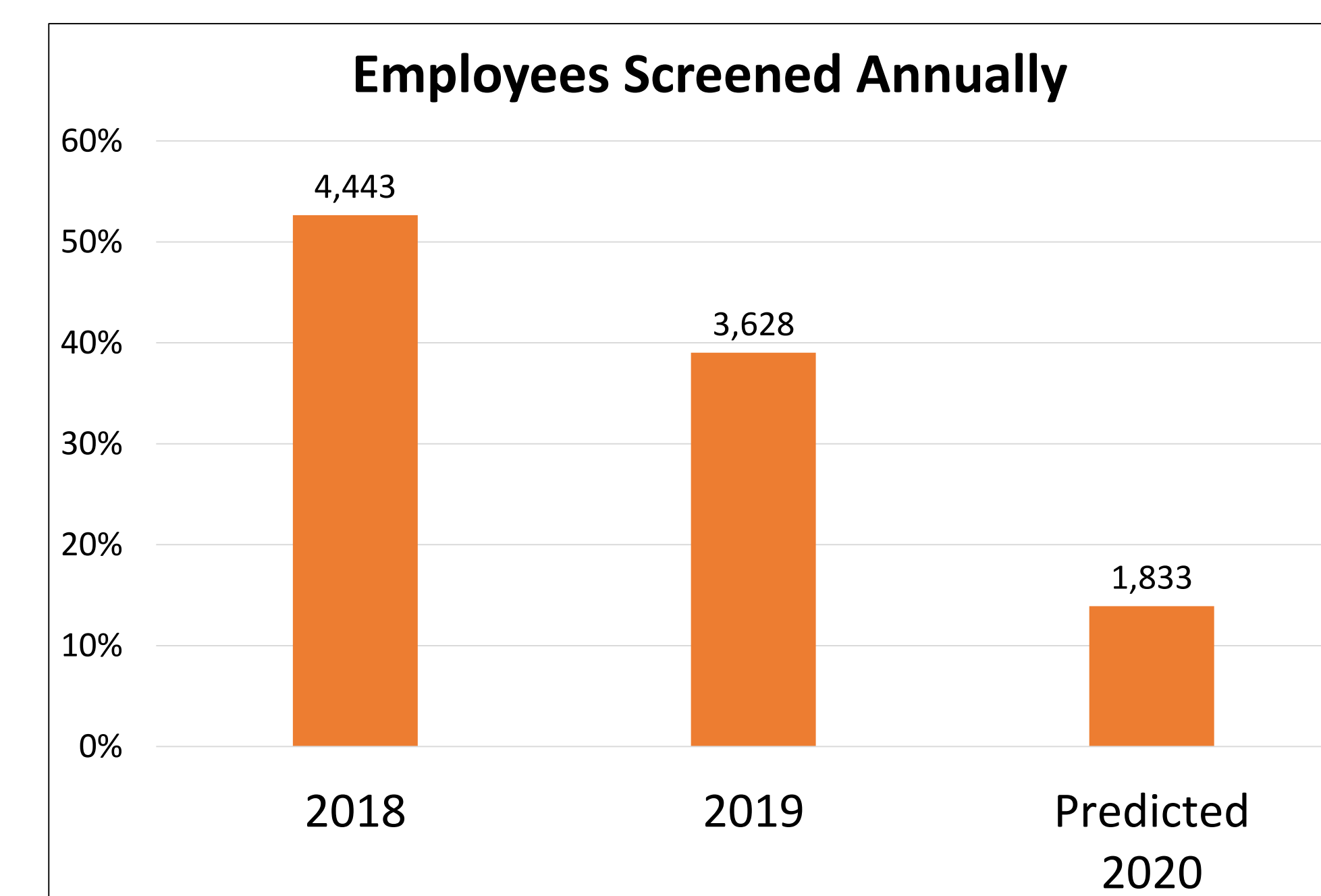
1. Co-workers who have traveled/resided (for ≥ 1 month) in any country/region other than Australia, Canada, New Zealand, USA, western/northern Europe).
2. Co-workers who have had close contact with someone who has had infectious TB disease since the last TB test.
3. Co-workers who are immunosuppressed (e.g. HIV, organ transplant recipient, chronic steroids).

6. Develop annual education that addresses:
 - Reason for change in TB screening protocol
 - TB transmission
 - Latent TB infection and TB disease
 - TB signs and symptoms
 - Occupational and non-occupational risks of acquiring TB
 - Risk of developing TB disease if infected
7. Employees who self identify as high risk based on occupational risk are screened for TB annually via Employee Health Services. Employees with non-occupational exposure are instructed to consult with their primary care physician.

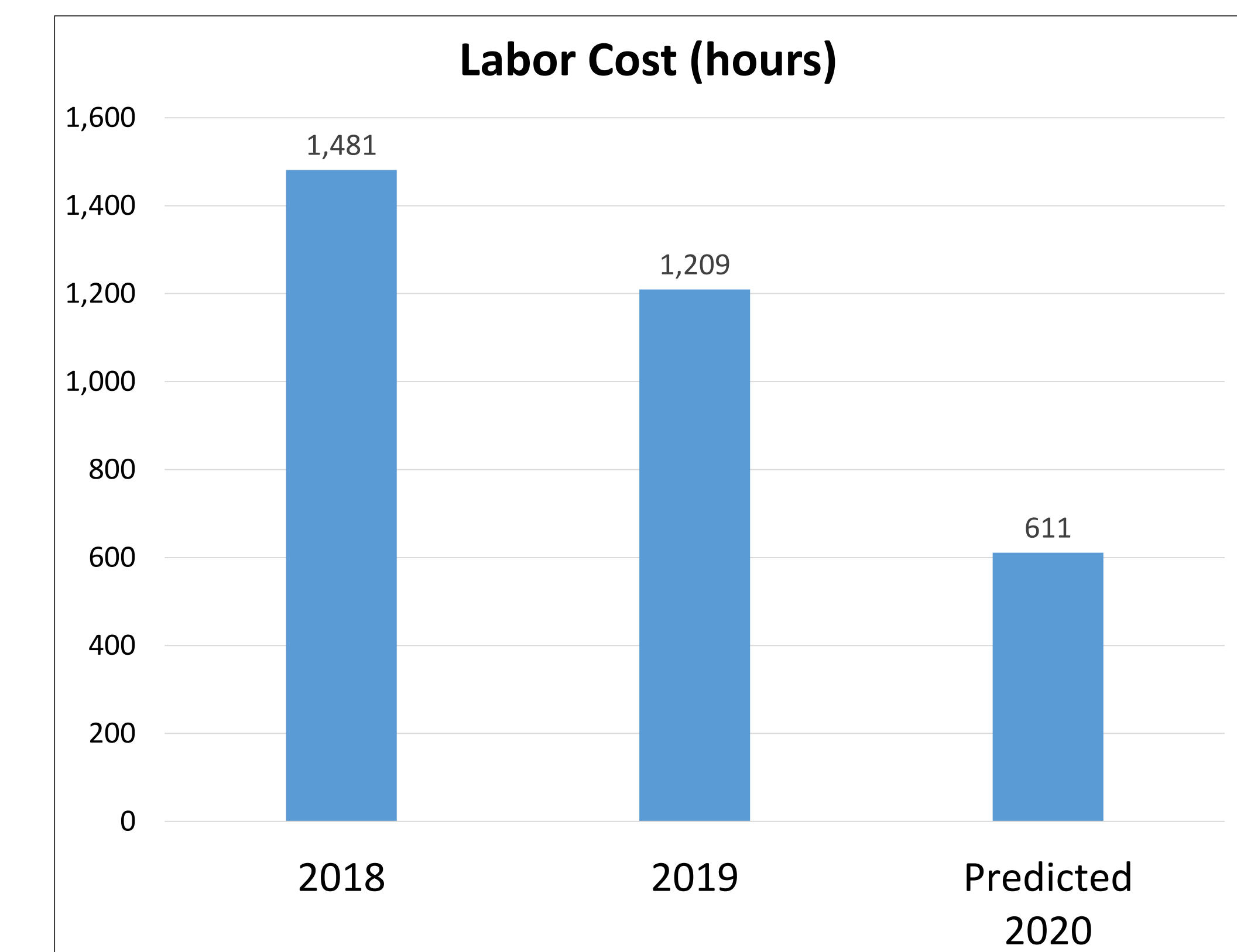
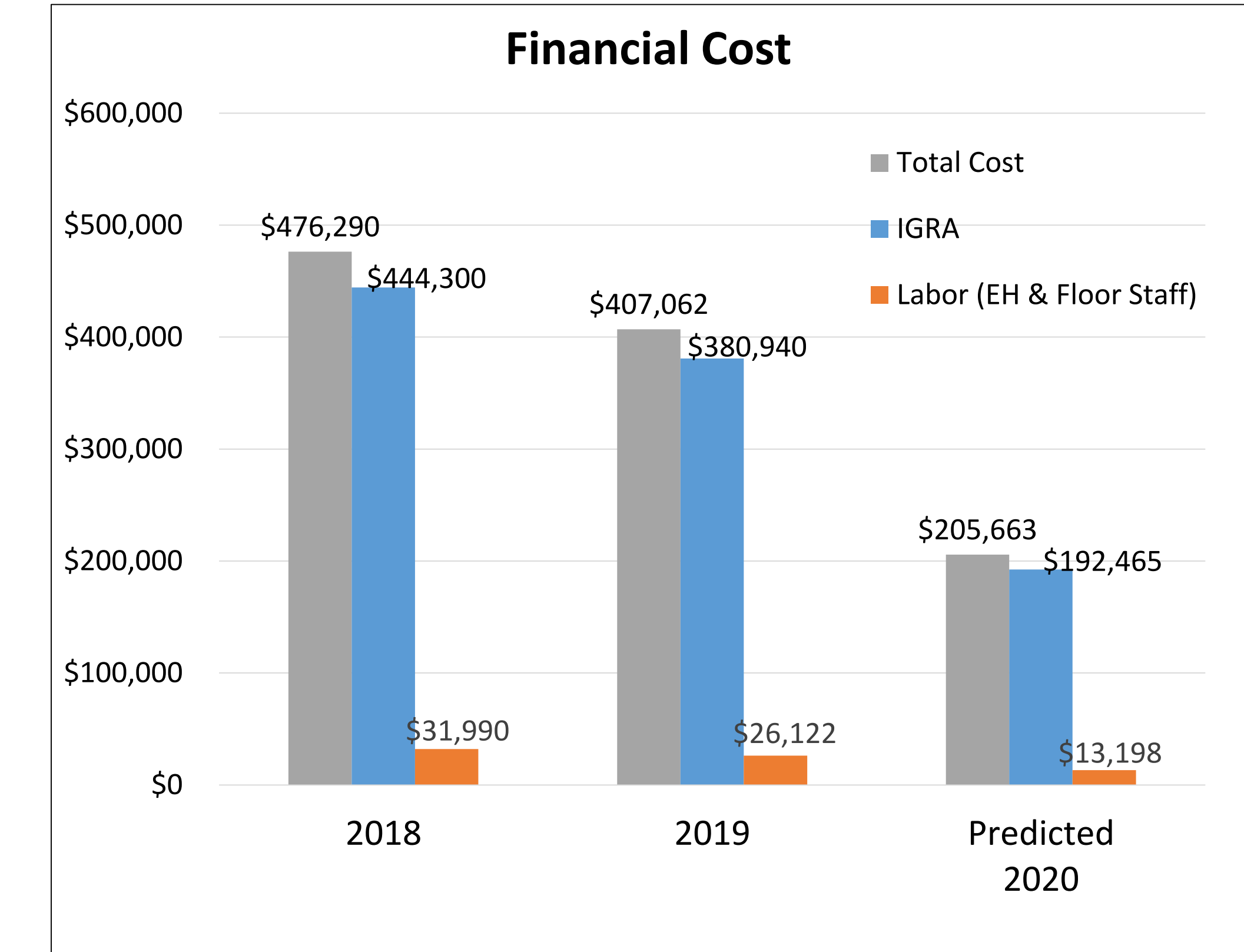
Results

In 2018, this hospital system of about 10,000 employees screened 4,443 HCP for TB at a cost of \$476,290. In 2019, the cost of the T Spot test increased from \$100 to \$105, and first phase of the individual risk assessment model was rolled out reducing the number of employees screened. In 2019 the cost of screening 3,628 HCP was \$407,062. In 2020, it is anticipated that 1,833 HCP will be screened saving the hospital an estimated minimum of \$270,627.

Each IGRA test takes Employee Health about 10 minutes to perform which equates to an average of \$3.60 per test performed. We double this number in the analysis to account for the cost of taking the HCP from their regular duties to have the IGRA drawn. The labor burden associated with Employee Health personnel will fall from approximately 1,481 hours in 2018 to 611 hours in 2020.



Results



Conclusion

Adoption of the individual risk assessment model for TB screening based on "Tuberculosis Screening, Testing, and Treatment of U.S. Health Care Personnel: Recommendations from the National Tuberculosis Controllers Association and CDC, 2019" will greatly reduce the financial and labor burden in health care settings when implemented. Facilities will need to continue to monitor conversion rates as well as individual risk factors (occupational and non-occupational) in order to ensure the screening program is targeting the appropriate job categories.