



**& AIR QUALITY
WORKFORCE**
AT THE SMOKE-FREE
PALACE CASINO
— NOVEMBER

2016 • mississippi tobacco data

The Palace Casino

GROWTH FIVE YEARS AFTER IMPLEMENTING A SMOKE-FREE POLICY

The Palace Casino in Biloxi implemented a smoke-free policy when it reopened on June 14, 2011. The casino voluntarily prohibited smoking inside all of the casino facility, with the exception of a smoking lounge located off of the casino floor. The purpose of this brief is to summarize the available data about the potential economic impact of this new policy.

The Mississippi Gaming Commission releases quarterly reports that provide data on all of the non-reservation casinos. Although these reports do not release revenue data, the commission does release data on the number of employees, number of slot games,

and number of table games for each casino. This brief examines these data for the Palace Casino, in the context of the Coastal Region Casinos.

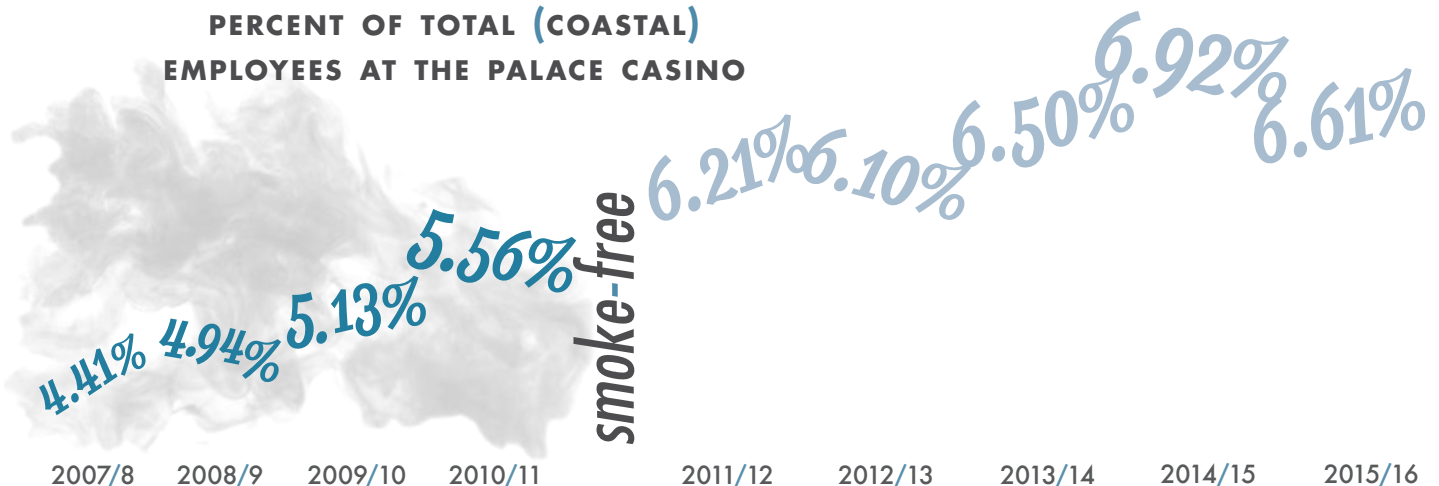
COASTAL REGION CASINOS

1. Beau Rivage
2. Boomtown
3. Golden Nugget
4. Hard Rock Casino
5. Harrah's Gulf Coast
6. Hollywood Casino
7. Imperial Palace
8. Island View Casino
9. Palace Casino
10. Scarlet Pearl
11. Silver Slipper
12. Treasure Bay

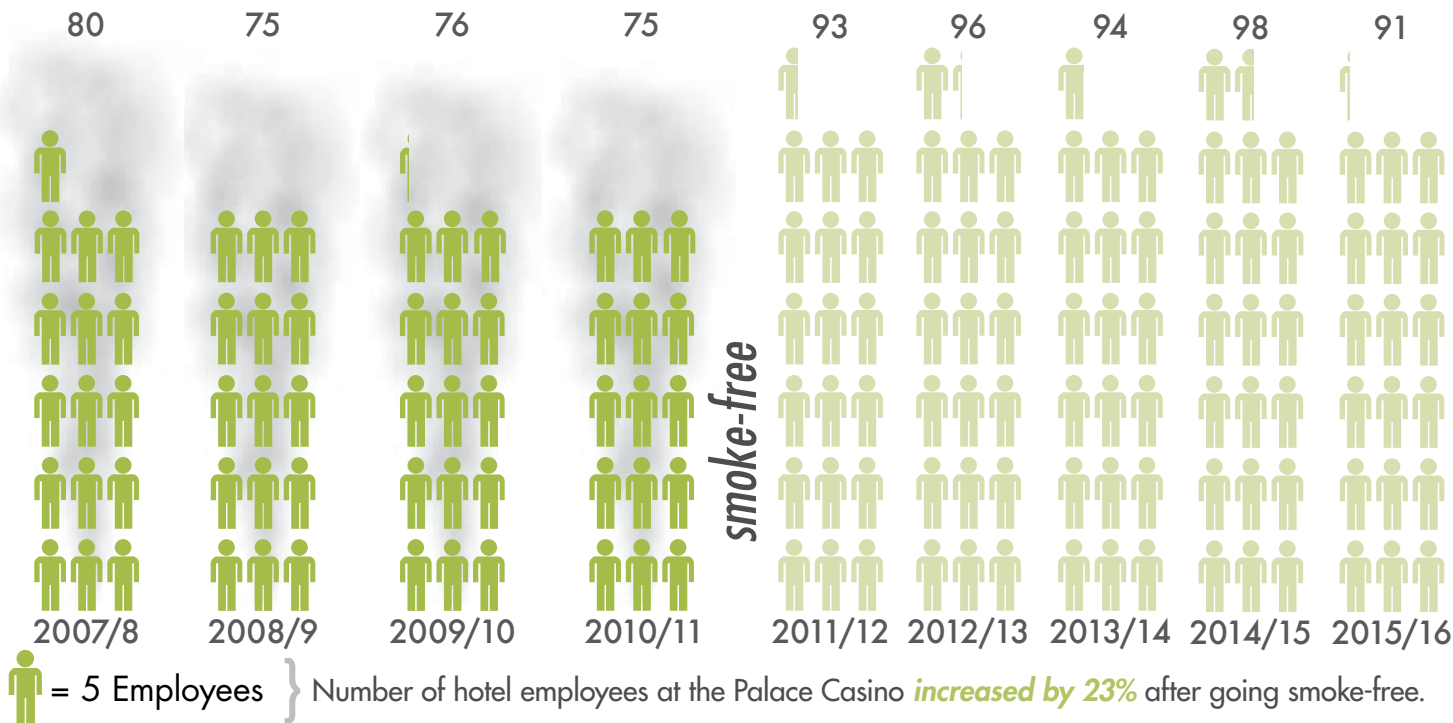
NUMBER OF EMPLOYEES AT THE PALACE CASINO



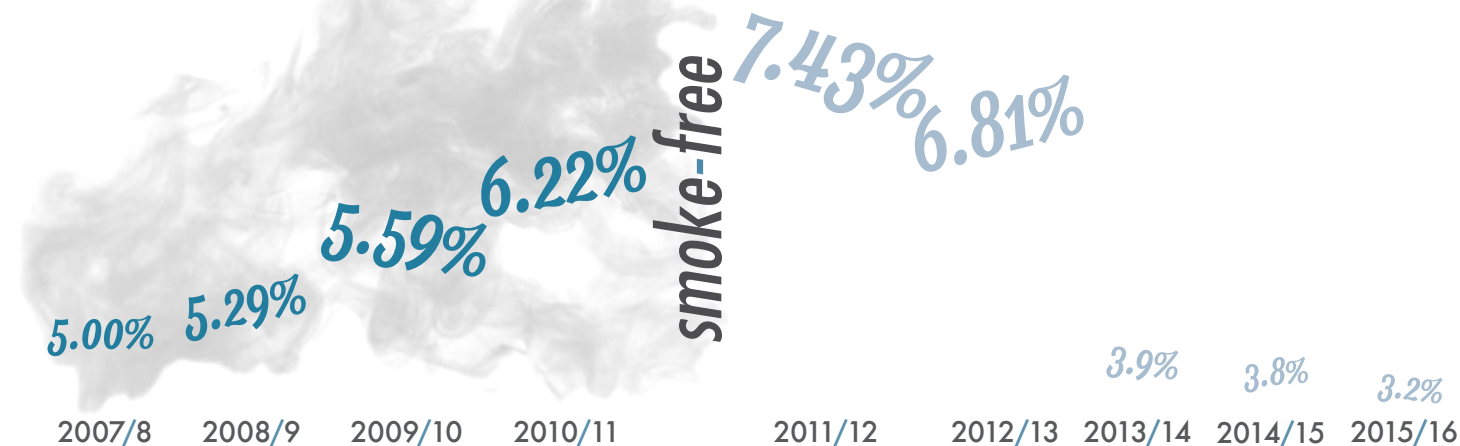
PERCENT OF TOTAL (COASTAL) EMPLOYEES AT THE PALACE CASINO



NUMBER OF HOTEL EMPLOYEES AT THE PALACE CASINO



PERCENT OF TOTAL (COASTAL) HOTEL EMPLOYEES AT THE PALACE CASINO

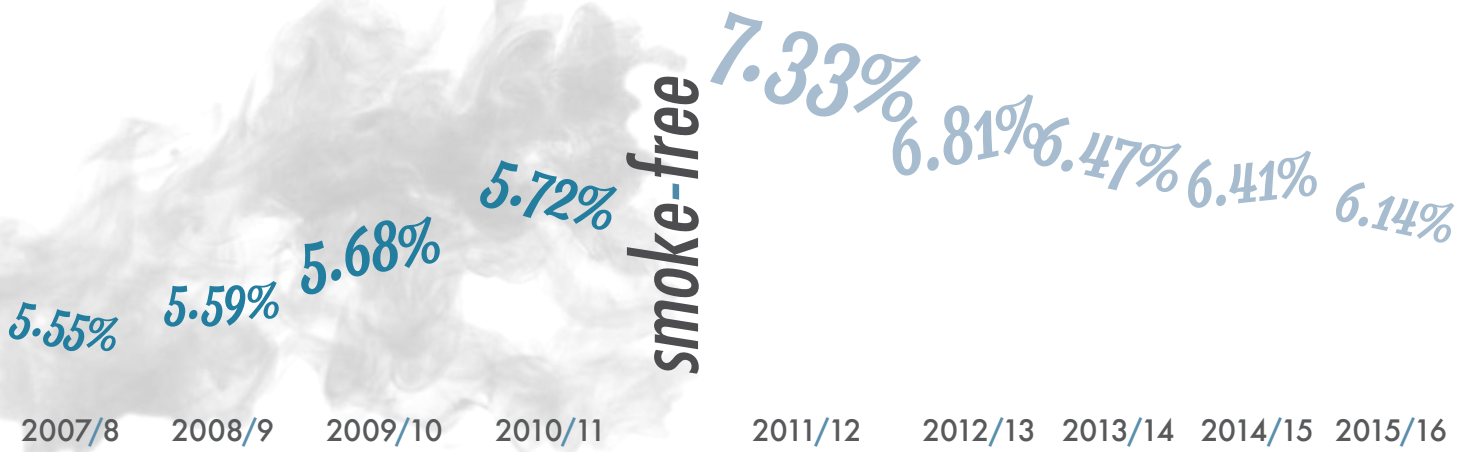


→ The number of hotel employees at the Palace Casino **did not change** from 2011/12 to 2014/15. However, the percent of coastal hotel employees at the Palace Casino **decreased** after the Beau Rivage Casino shifted more than a thousand employees from casino employees to hotel employees during the last quarter of 2012/13.

NUMBER OF SLOTS AT THE PALACE CASINO



PERCENT OF TOTAL (COASTAL) SLOTS AT THE PALACE CASINO



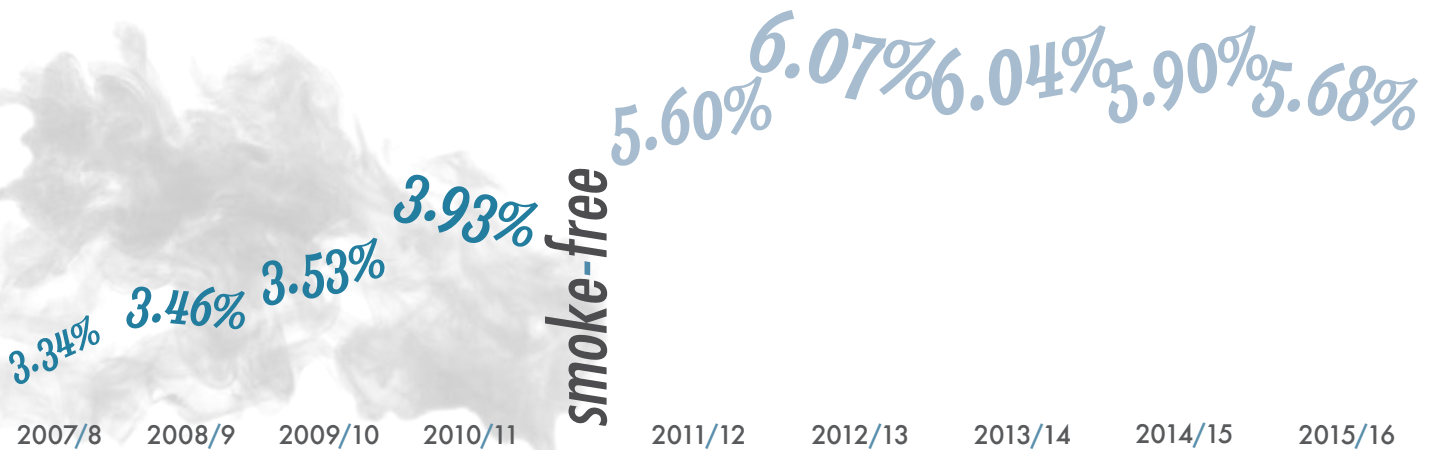
➔ Percent of coastal slots located at the Palace Casino **increased by 18%** after going smoke-free.

NUMBER OF TABLES AT THE PALACE CASINO



= 2 Tables } Number of tables at the Palace Casino **increased by 69%** after going smoke-free.

PERCENT OF TOTAL (COASTAL) TABLES AT THE PALACE CASINO



➔ Percent of coastal tables located at the Palace Casino **has increased** after going smoke-free.

RESULTS

- Data from the Mississippi Gaming Commission demonstrate that the Palace Casino experienced no reduction in the number of employees, slot games, or table games during the year after implementing a smoke-free policy in June of 2011.
- Data from the Coastal Region Casinos demonstrate no reduction in the Palace Casino market share of the region after implementing a smoke-free policy in June of 2011, as measured by the number of employees, slot games, or table games.
 - Although it is possible that the modest increases observed after the smoke-free policy are because the casino increased its square footage during the renovation preceding the smoke-free policy, there was no evidence of a reduction in workforce or the amount of gaming.
- Based on the publicly available data from the Mississippi Gaming Commission, the implementation of a smoke-free policy did not harm the Palace Casino.

METHODS

- Palace Casino data are examined for the number of employees, number of slot games, and number of table games for fiscal years 2007/08 - 2015/16.
- Data are also examined for the total number of employees, number of slot games, and number of table games in the Coastal Region.
- The New Palace Casino implemented their smoke-free policy in mid-June of 2011, and thus these data provide post-policy data.
- Raw numbers of employees, slot games, and table games are provided for the New Palace Casino.
- Percent of employees, slot games, and table games in the Coastal Region that are housed in the New Palace Casino are also provided.
 - These data illustrate the amount of the casino market in the Coastal Region that the New Palace Casino occupies.

CAUTIONARY NOTE

- The number of employees, slot games, and table games serve as a proxy for revenue (because revenue data is not available) and may not perfectly correlate with revenue.
- Although it is not possible to determine to what extent the observed growth is due to the renovation, increased gaming floor, and smoke-free policy, these results clearly demonstrate that the Palace Casino did not suffer as a result of implementing a smoke-free policy.

Tobacco Smoke & Methods

FROM THE 2013 MISSISSIPPI AIR QUALITY STUDY REPORT

According to the Surgeon General, there is no safe level of exposure to secondhand smoke¹. Tobacco smoke contains more than 7,000 chemicals, of which at least 69 cause cancer². Acute risks of secondhand smoke exposure include sudden infant death syndrome, acute respiratory problems, otitis media, increased asthma severity, and myocardial infarction. The numerous chronic and acute harms of tobacco smoke have been documented in many literature reviews^{1,2}.

particles can aggravate heart and lung diseases and have been linked to effects such as: cardiovascular symptoms; cardiac arrhythmias; heart attacks; respiratory symptoms; asthma attacks; and bronchitis. These effects can result in increased hospital admissions, emergency room visits, absences from school or work, and restricted activity days. Individuals that may be particularly sensitive to fine particle exposure include people with heart or lung disease, older adults, and children.

AMERICAN HEART ASSOCIATION

Tobacco smoke causes about 46,000 heart disease deaths and 3,400 lung cancer deaths. Studies show that the risk of developing heart disease is about 25-30 percent higher among people exposed to environmental tobacco smoke at home or work. Secondhand smoke promotes illness, too. Children of smokers have many more respiratory infections than do children of nonsmokers. Nonsmoking women exposed to tobacco smoke are also more likely to have low-birthweight babies.

AMERICAN CANCER SOCIETY

Secondhand smoke (SHS) is classified as a “known human carcinogen” (cancer-causing agent) by the US Environmental Protection Agency (EPA), the US National Toxicology Program, and the International Agency for Research on Cancer (IARC), a branch of the World Health Organization.

Tobacco smoke contains more than 7,000 chemical compounds. More than 250 of these chemicals are known to be harmful, and at least 69 are known to cause cancer. SHS has been linked to lung cancer. There is also some evidence suggesting it may be linked with childhood leukemia and cancers of the larynx (voice box), pharynx (throat), brain, bladder, rectum, stomach, and breast.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Health studies have shown a significant association between exposure to fine particles and premature death from heart or lung disease. Fine

METHODS

In October through early December 2012, indoor air quality was assessed in nine Mississippi municipalities. We applied a purposeful convenience sample rather than a random sample of venues for logistic reasons. Also, a small random sample of venues would unlikely be representative of the entire population of venues in the state. Three of the communities had 100% comprehensive smoke-free ordinances (Clinton, Jackson, Pearl), three had partial smoke-free ordinances (Gulfport, McComb, Olive Branch), and three had no ordinance regarding smoking (Biloxi, Cleveland, West Point). The results reported here are from one smoke-free casino with no observed smoking and three smoking-permitted casinos with observed smoking.

MICROGRAMS PER CUBIC METER ($\mu\text{G}/\text{M}^3$)

Air quality is assessed based on Particulate Matter (PM). The size of particles is directly linked to their potential for causing health problems. Very small particles generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. Air quality levels are defined as the mass of particulate matter ≤ 2.5 microns in diameter in a volume of air: micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). A microgram is one millionth of a gram. A cubic meter (approximately 39” X 39” X 39”) describes a volume of air that is about the size of a washing machine.

Methods & References

FROM THE 2013 MISSISSIPPI AIR QUALITY STUDY REPORT

We used a TSI SidePak Monitor using the protocol developed by the Roswell Park Cancer Institute⁴ to measure the concentration of fine particle air pollution. The specific class of respirable suspended particles (RSPs) monitored was particulate matter ≤ 2.5 microns in diameter ($PM_{2.5}$), a commonly used marker for tobacco smoke exposure^{5,6}. Air quality studies typically monitor particles of this size because $PM_{2.5}$ are released in significant amounts from burning cigarettes, are easily inhaled deep into the lungs, and cause a variety of adverse health effects including cardiovascular and respiratory morbidity and death.

THE ROSWELL PARK CANCER INSTITUTE PROTOCOL⁷

The number of people inside the venue and the number of burning cigarettes were recorded during sampling. These observations were averaged over the time inside the venue to determine the average number of people on the premises and the average number of burning cigarettes. Room dimensions were also determined using a combination a counting of construction materials of a known size such as floor tiles or estimation. Room volumes were calculated from these dimensions. The active smoker density was calculated by dividing the average

number of burning cigarettes by the volume of the room in meters.

A TSI SidePak AM510 Personal Aerosol Monitor (TSI, Inc., St. Paul, MN) was used to sample and record the levels of respirable suspended particles in the air. The SidePak uses a built-in sampling pump to draw air through the device where the particulate matter in the air scatters the light from a laser. This portable light-scattering aerosol monitor was fitted with a 2.5 μm impactor in order to measure the concentration of particulate matter with a mass-median aerodynamic diameter less than or equal to 2.5 μm , or $PM_{2.5}$. Tobacco smoke particles are almost exclusively less than 2.5 μm with a mass-median diameter of 0.2 μm . The Sidepak was used with a calibration factor setting of 0.32, suitable for secondhand smoke. In addition, the SidePak was zero-calibrated prior to each use by attaching a HEPA filter according to the manufacturer's specifications.

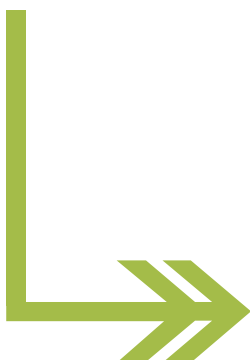
Sampling was discreet in order not to disturb the occupants' normal behavior. For each venue, the first and last minute of logged data were removed because they are averaged with outdoor and entryway air. The remaining data points were averaged to provide an average $PM_{2.5}$ concentration within the venue.

REFERENCES

1. U.S. Department of Health and Human Services. *The health consequences of involuntary exposure to secondhand smoke: a report of the Surgeon General*. 2006.
2. U.S. Department of Health and Human Services. *How tobacco smoke causes disease: the biology and behavioral basis from smoking-attributable disease - a report of the Surgeon General*. 2010.
3. Travers M. *Indoor Air Monitoring Protocol*. Roswell Park Cancer Institute. 2006.
4. Connolly GN, Carpenter CM, Travers MJ, et al. How smoke-free laws improve air quality: a global study of Irish pubs. *Nicotine Tobacco Research*, 2009;11:600–5.
5. (Link) --> CDC. Indoor air quality in hospitality venues before and after implementation of a clean indoor air law—western New York, 2003. *MMWR* 2004;53:1038–41.

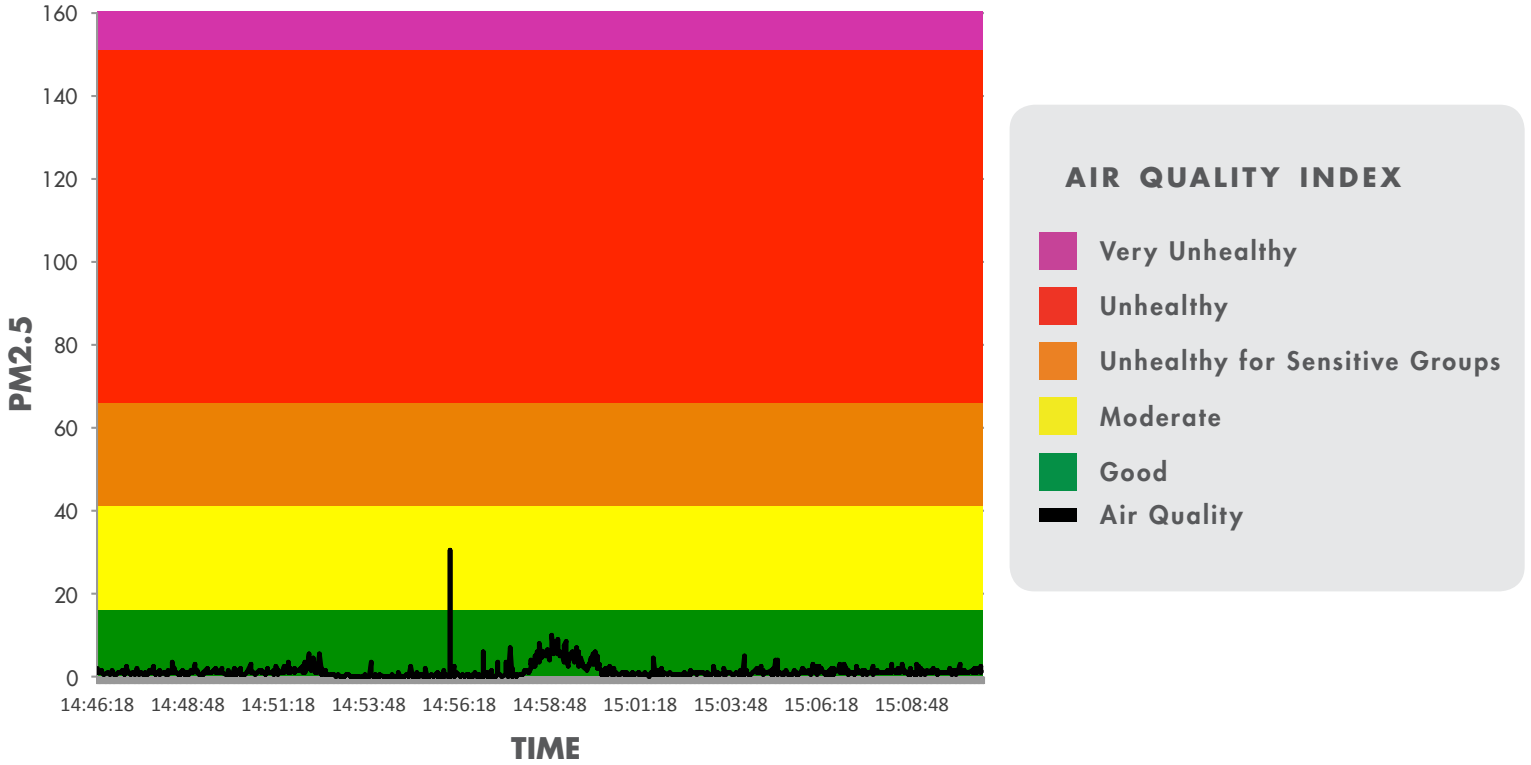
US EPA AIR QUALITY INDEX

| Air Quality | PM _{2.5} (µg/m ³) | Health Advisory |
|--------------------------------|---|--|
| Hazardous | ≥251 | People with heart or lung disease, older adults, and children should remain indoors and keep activity levels low. Everyone else should avoid all physical activity outdoors. |
| Very Unhealthy | 151-250 | People with heart or lung disease, older adults, and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exertion. |
| Unhealthy | 66-150 | People with heart or lung disease, older adults, and children should avoid prolonged or heavy exertion. Everyone else should reduce prolonged or heavy exertion. |
| Unhealthy for Sensitive Groups | 41-65 | People with heart or lung disease, older adults, and children should reduce prolonged or heavy exertion. |
| Moderate | 16-40 | Unusually sensitive people should consider reducing prolonged or heavy exertion. |
| Good | ≤15 | None. |



SOURCE : THE 2013 MISSISSIPPI AIR QUALITY STUDY REPORT

SMOKE-FREE | PALACE CASINO

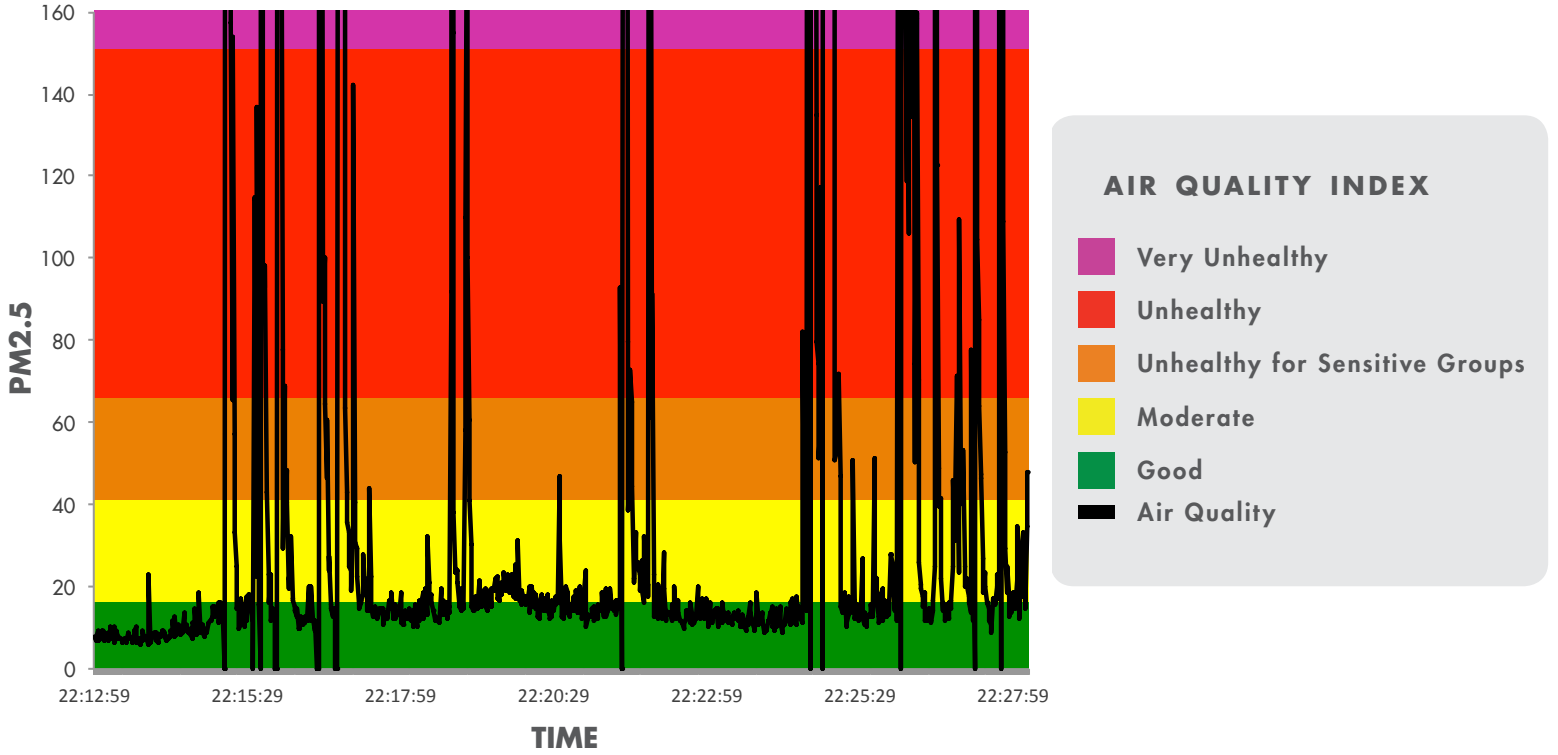


PM_{2.5} = 1.3 µg/m³
 This PM_{2.5} level is within the current U.S. Environmental Protection Agency's threshold for *Good Air Quality*. → venue 30



SOURCE : THE 2013 MISSISSIPPI AIR QUALITY STUDY REPORT

SMOKING ALLOWED | BILOXI CASINO



$PM_{2.5} = 57.9 \mu\text{g}/\text{m}^3$

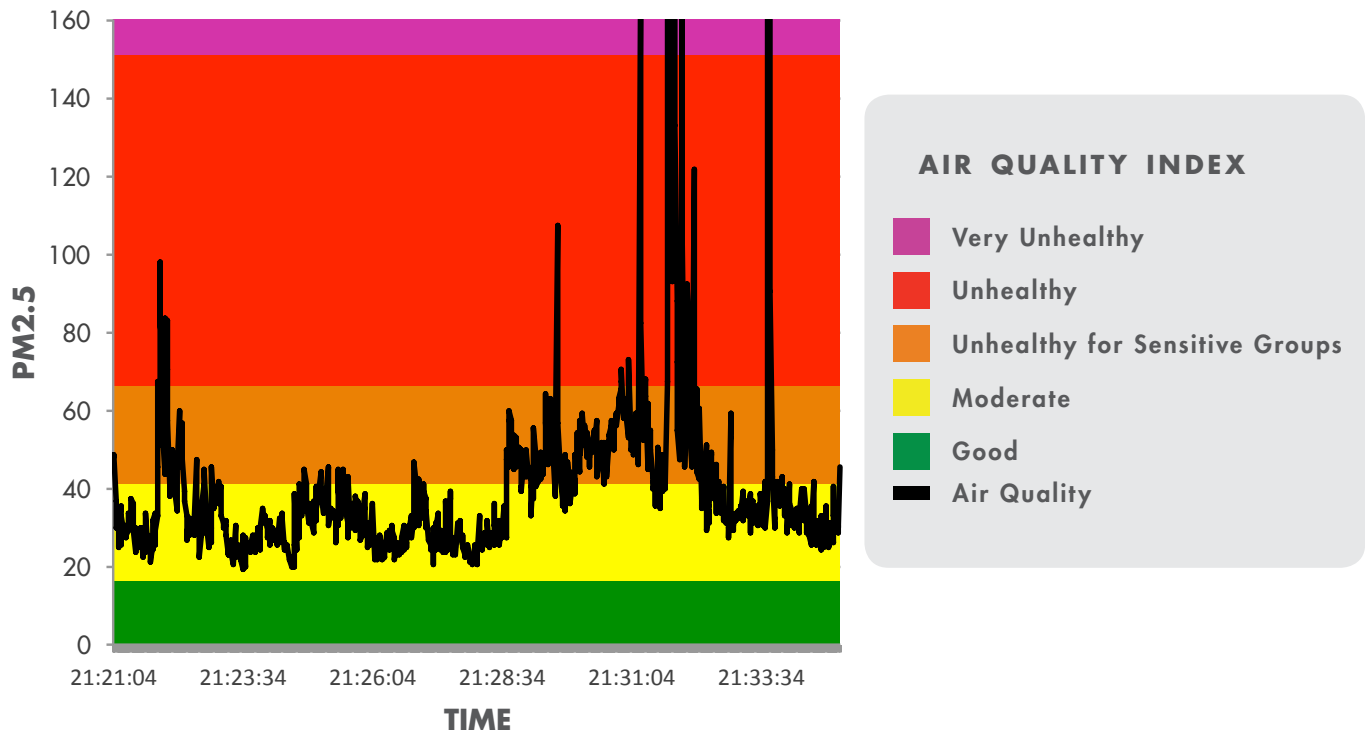
This $PM_{2.5}$ level exceeds the current U.S. Environmental Protection Agency's threshold for *Unhealthy for Sensitive Groups* Air Quality.

→ venue 29



SOURCE : THE 2013 MISSISSIPPI AIR QUALITY STUDY REPORT

SMOKING ALLOWED | BILOXI CASINO



PM_{2.5} = 44.9 µg/m³

This PM_{2.5} level exceeds the current U.S. Environmental Protection Agency's threshold for *Unhealthy for Sensitive Groups* Air Quality. → venue 28



SOURCE : THE 2013 MISSISSIPPI AIR QUALITY STUDY REPORT



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