

# Temporal Trends in LVAD Implantations and Inpatient Outcomes in Cancer Survivors from 2008 through 2016: Insights from National Inpatient Sample

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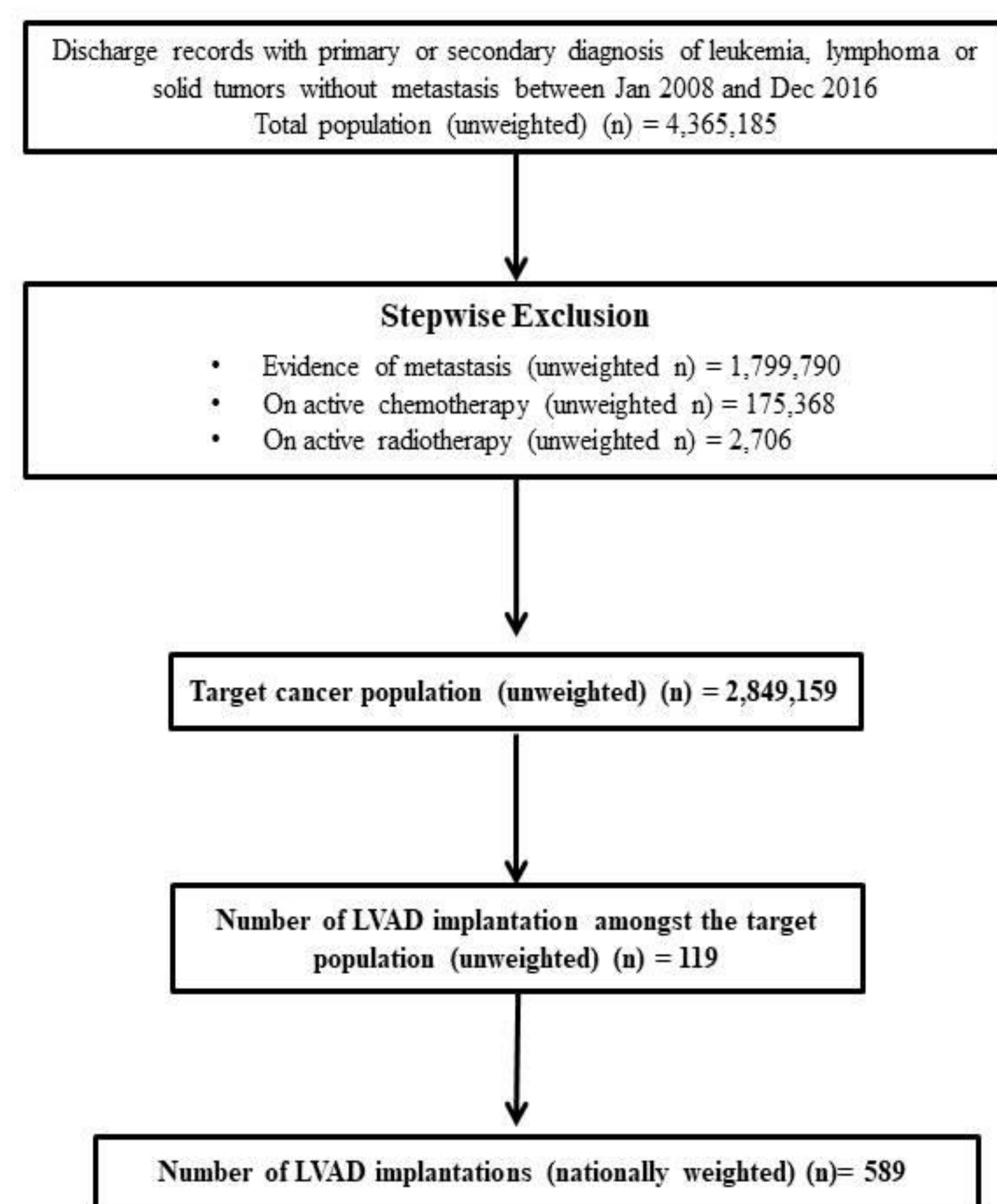


## Introduction

- Heart failure is a significant cause of morbidity and mortality in cancer patients. While they are often not candidates for transplantation, alternate advanced therapies, such as Left Ventricle Assist Device (LVAD), may provide hope for life prolongation.
- We aimed to examine national trends in the use of LVAD and associated outcomes in cancer patients from 2008 through 2016 using the National Inpatient Sample.

## Methods

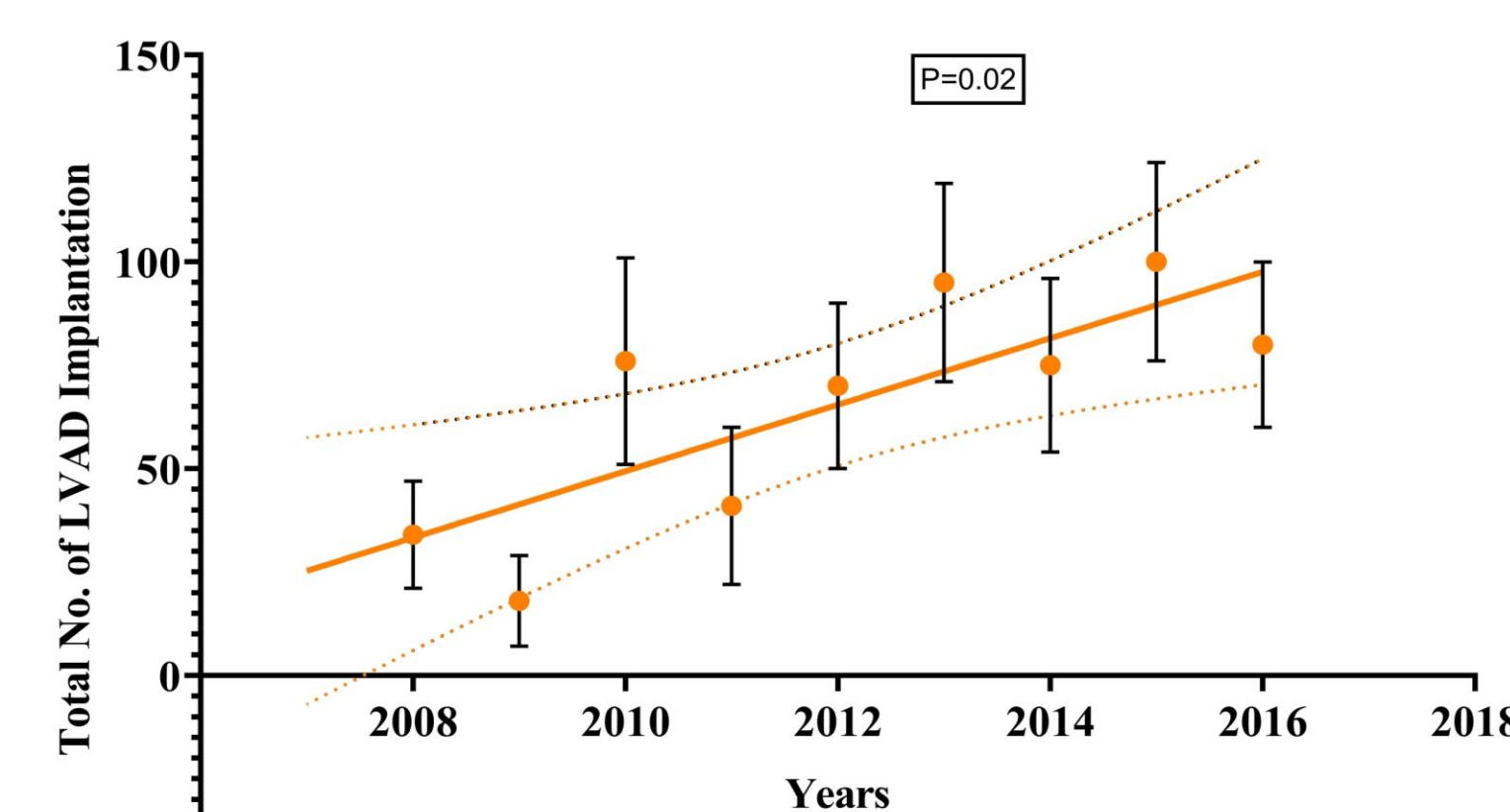
- National Inpatient Sample is the largest all-payer inpatient care database in the United States that represents a random, 20% stratified sample of all hospitalizations from 46 states comprising approximately eight million hospitalizations per year<sup>1</sup>.
- We identified records with a diagnosis of leukemia, lymphoma, or solid tumors without metastasis. Discharge records suggestive of metastasis, active chemotherapy, or radiotherapy were excluded. LVAD implantation was then identified by ICD9 code 37.66 or ICD10 codes 02HA0QZ, 02HA3QZ, or 02HA4QZ in any procedure field to yield the final cohort (weighted N=589).



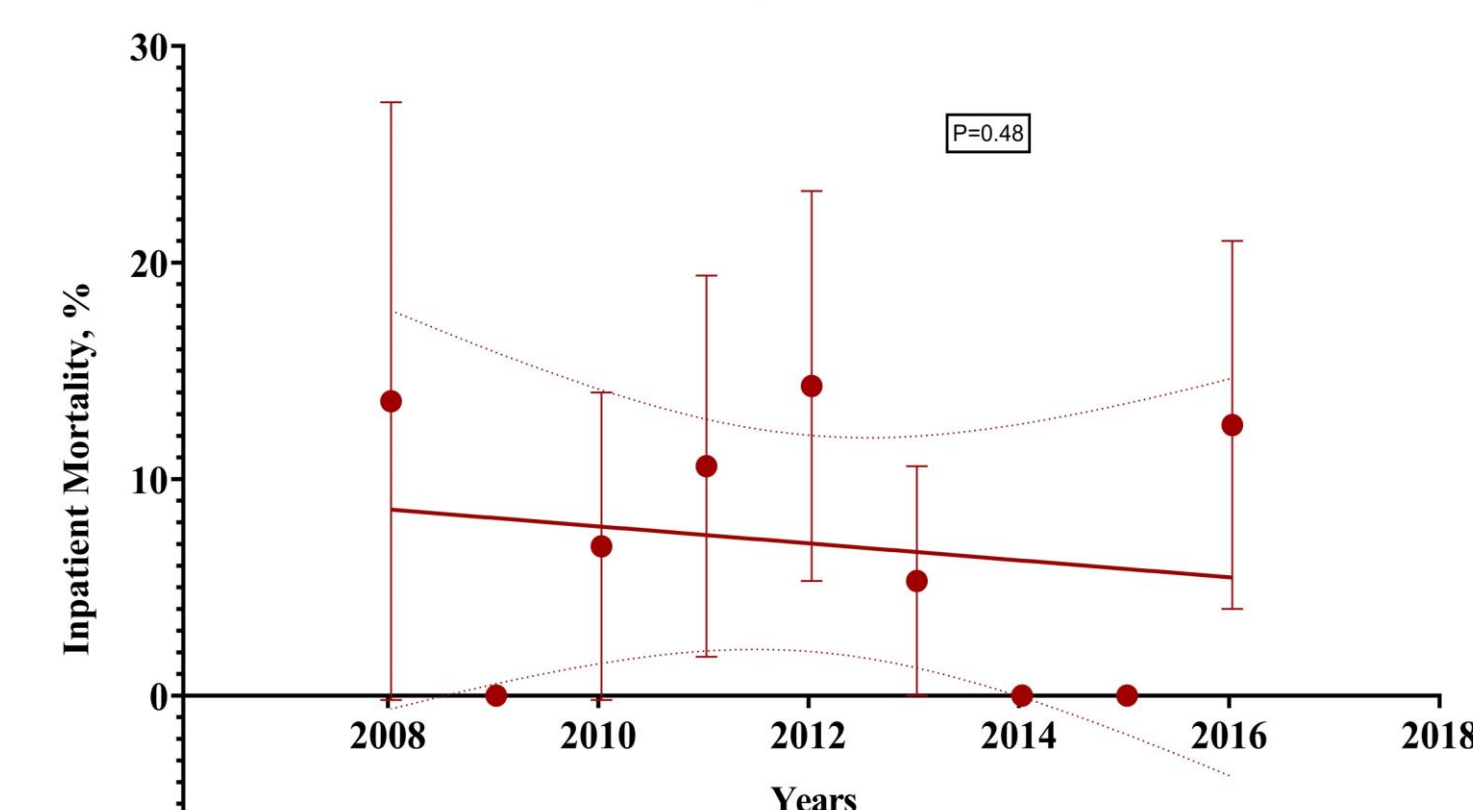
## Results

- Patients had a mean age of 58 years, 63% male, and 66.5% Caucasians. The prevalence of cardiac arrhythmias (78.9%) and fluid/electrolyte disorders (67.2%) was highest with a mean Elixhauser comorbidity index of 7.2. Overall inpatient mortality (IM) was 6.7%, mean length of stay (LOS) was 34 days and mean charges (CHG) were \$ (x10<sup>3</sup>) 856.
- From 2008 to 2016, the rates of LVAD implantations increased from 34 to 80 (p=0.02) with a concomitant increase in CHG [(\$x10<sup>3</sup>): 580 vs 980, p=0.02]. However, IM [13.6% in 2008 vs 12.5% in 2016, p=0.48] and LOS [days: 40 in 2008 vs 32 in 2016, p=0.41] remained essentially unchanged.
- On multivariate regression analysis, the presence of liver disease was associated with higher odds of IM and age, admission to a private not-for-profit or urban teaching hospital, paralysis, weight loss, fluid/electrolyte disorder, and psychosis were associated with increased LOS.

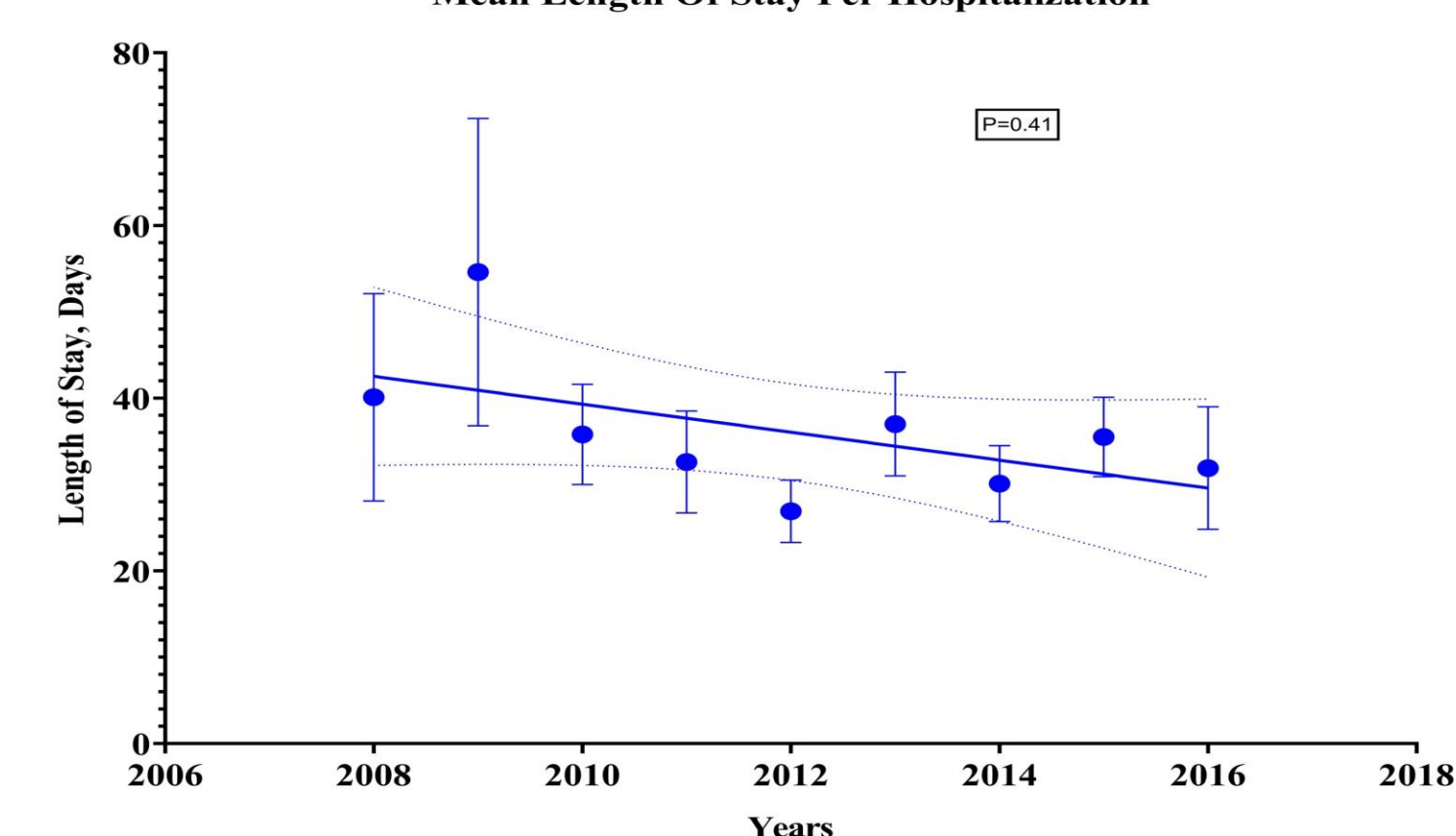
Trends In LVAD Implantation in Non-Metastatic Cancer Patients Who Are Not On Active Chemotherapy or Radiotherapy



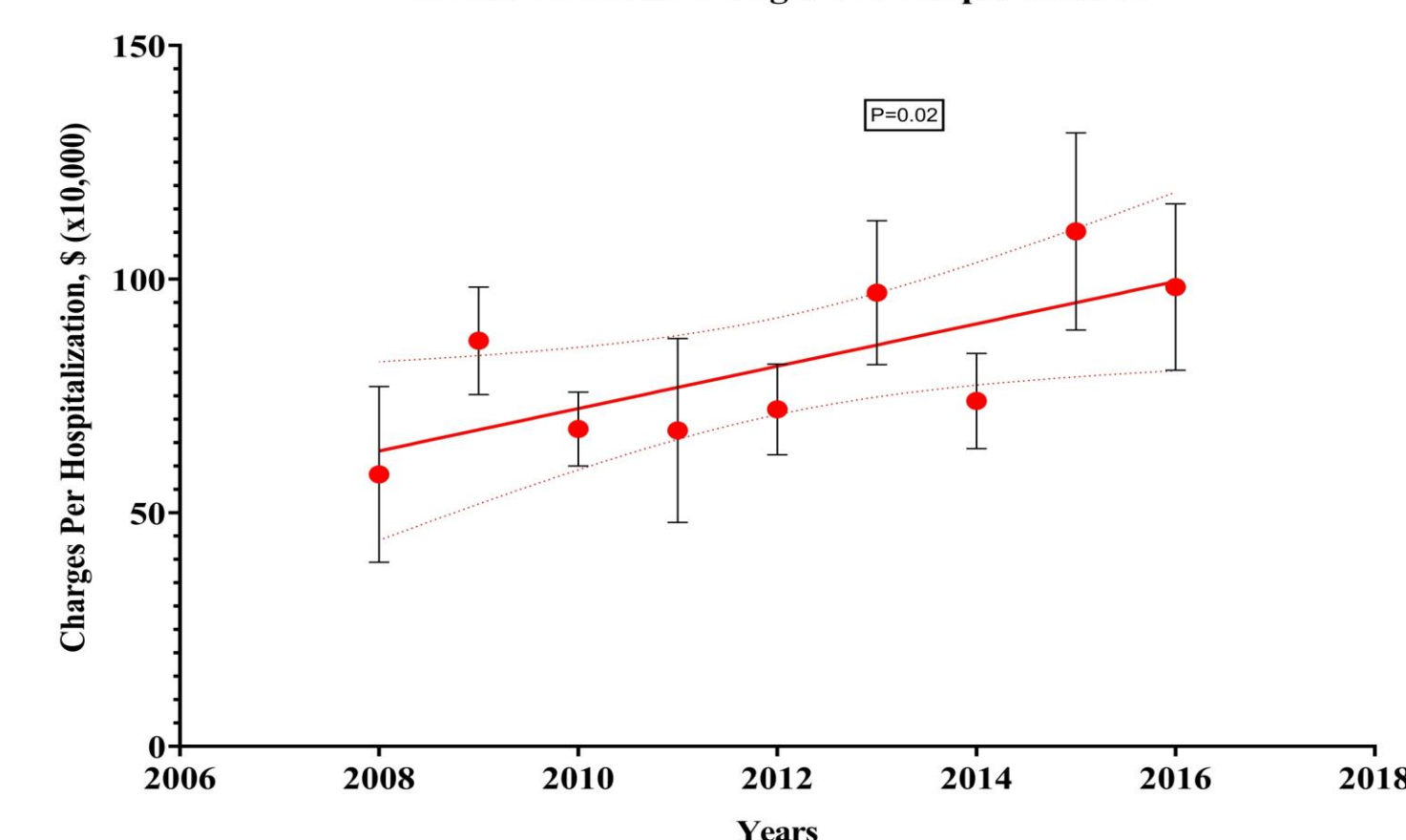
Trends In All-Cause Inpatient Mortality In Cancer Patients Undergoing LVAD Implantation



Mean Length Of Stay Per Hospitalization



Trends In Mean Charges Per Hospitalization



## Conclusion

- In conclusion, the rates of LVAD implantations have increased in cancer patients over the nine-year study period, but IM and LOS have not significantly changed.

## References

1. HCUP National Inpatient Sample (NIS). Healthcare Cost and Utilization Project (HCUP). 2012. Agency for Healthcare Research and Quality, Rockville, MD.