Pianpian Cao

September 2024

Tel: 765-714-3283
Email: caop@umich.edu
www.linkedin.com/in/pianpian-cao

Education

University of Michigan, Ann Arbor, MI   **August 2021**
PhD in Epidemiologic Science   GPA: 4.0/4.0
Advisor: Rafael Meza
Thesis: Enhancing the Impact of Lung Cancer Screening: Assessment of the Performance of Joint Smoking Cessation and Screening Interventions and Personalized Screening Scheduling Using Microsimulation Modeling

University of Michigan, Ann Arbor, MI   **April 2016**
Master of Public Health in Epidemiology Methods and Applications   GPA: 4.0/4.0
Advisor: Rafael Meza
Thesis: Liver cancer incidence trends in Lampang, Thailand

Purdue University, West Lafayette, IN   **May 2014**
Bachelor of Science with Highest Distinction   GPA: 3.93/4.0
Double Major: Mathematics-Computer Science, Mathematics/Applied Statistics; Statistics-Math Emphasis, Applied Statistics
Minor: Biology

Peer Reviewed Publications

1. ten Haaf, K., de Nijs, K., Simoni, G., Alban, A., **Cao, P.**, Sun, Z., Yong, J., Jeon, J., Toumazis, I., Han, S.S., Gazelle, G.S., Kong, C.Y., Plevritis, S.K., Meza, R., & de Koning, H.J. (2024). The Impact of Model Assumptions on Personalized Lung Cancer Screening Recommendations. *Med Decis Making.* doi: 10.1177/0272989X241249182.

2. Meza, R., **Cao, P.**, Jeon, J., Warner, K.E., & Levy, D.T. (2023). Trends in US adult smoking prevalence, 2011 to 2022. *JAMA Health Forum*. doi: 10.1001/jamahealthforum.2023.4213. PMID: 38038988; PMCID: PMC10692849.

3. Meza, R., **Cao, P.**, de Nijs, K., Jeon, J., Smith, R., ten Haaf, K., & de Koning, H.J. (2023). Assessing the impact of increasing lung screening eligibility by relaxing the years since quit maximum threshold: A simulation modeling study. *Cancer.* doi: 10.1002/cncr.34925.PMID: 37909874.

4. Skolnick, S., **Cao, P.**, Jeon, J., & Meza, R. (2023). Contribution of smoking patterns, disease natural history, and survival on lung cancer disparities in Black individuals: A modeling study. *JNCI Monographs.* https://doi.org/10.1093/jncimonographs/lgad016

5. Tam, J., Jaffri, M.A., Mok, Y., Jeon, J., Szklo, A.S., Souza, M.C., Holford, T.R., Levy, D.T., **Cao, P.**, Sanchez-Romero, L.M., & Meza, R. (2023). Patterns of Birth Cohort-Specific Smoking Histories in Brazil. *Am. J. Prev. Med.* https://doi.org/10.1016/j.amepre.2022.12.002

6. Toumazis, I., **Cao, P.**, de Nijs, K., Bastani, M., Munshi, V., Hemmati, M., ten Haaf, K., Jeon, J., Tammemagi, M., Gazelle, G.S., Feuer, E.J., Kong, C.Y., Meza, R., de Koning, H.J., Plevritis, S.K., & Han, S.S. (2023). A Cost-Effectiveness Evaluation of Risk Model-Based Lung Cancer Screening: A Comparative Modeling Analysis. *Annals of Internal Medicine*. https://doi.org/10.7326/M22-2216

7. **Cao, P.**, Jeon, J., Tam, J., Fleischer, N. L., Levy, D. T., Holford, T. R., & Meza, R. (2023). Smoking Disparities by Level of Educational Attainment and Birth Cohort in the US. *Am. J. Prev. Med.* doi.org/10.1016/j.amepre.2022.06.021

8. Jeon, J., **Cao, P.**, Fleischer, N. L., Levy, D. T., Holford, T. R., Meza, R., & Tam, J. (2023). Birth Cohort-Specific Smoking Patterns by Family Income in the US. *Am. J. Prev. Med.* doi.org/10.1016/j.amepre.2022.07.019

9. Meza, R., **Cao, P.**, Jeon, J., Fleischer, N. L., Holford, T. R., Levy, D. T., & Tam, J. (2023). Patterns of Birth Cohort-Specific Smoking Histories by Race and Ethnicity in the US. *Am. J. Prev. Med.* doi.org/10.1016/j.amepre.2022.06.022

10. Holford, T. R., McKay, L., Jeon, J., **Cao, P.,** Tam, J., Fleischer, N. L., Levy, D. T., & Meza, R.. (2023). Smoking Histories by State in the US. *Am. J. Prev. Med.* doi.org/10.1016/j.amepre.2022.08.018

11. **Cao, P.**, Jeon, J., & Meza, R. (2022). Evaluation of Benefits and Harms of Adaptive Screening Schedules for Lung Cancer: A Microsimulation Study. *J Med Screen.* 2022 Dec;29(4):260–7. doi: 10.1177/09691413221118194

12. **Cao, P.,** Smith, L., Mandelblatt, J. S., Jeon, J., Taylor, K. L., Zhao, A., Levy, D. T., Williams, R. M., Meza, R., & Jayasekera, J. (2022). Cost-Effectiveness of a Telephone-based Smoking Cessation Randomized Trial in the Lung Cancer Screening Setting. *JNCI Cancer Spectr.* doi: 10.1093/jncics/pkac048

13. **Cao, P.,** Rozek, R.S., Pongnikorn, D., Sriplung, H., & Meza, R. (2022). Comparison of Cholangiocarcinoma and Heptocellular Carcinoma Incidence Trends from 1993 to 2012 in Lampang, Thailand. *Int. J. Environ. Res. Public Health*, 19, 9551. https://doi.org/10.3390/ ijerph19159551

14. Taylor, K. L., Williams, R. M., Li, T., Luta, G., Smith, L., Davis, K. M., Stanton, C., Niaura, R., Abrams, D., Lobo, T., Mandelblatt, J., Jayasekera, J., Meza, R., Jeon, J., **Cao, P.,** & Anderson, E. D. (2022). A Randomized Trial of Telephone-Based Smoking Cessation Treatment in the Lung Cancer Screening Setting. *J Natl Cancer Inst.* doi: 10.1093/jnci/djac127

15. Meza, R., Jeon, J., Jimenez-Mendoza, E., Mok, Y., **Cao, P.**, Foley, K. L., ... & Joseph, A. M. (2022). National Cancer Institute Smoking Cessation at Lung Examination Trials Brief Report: Baseline Characteristics and Comparison With the US General Population of Lung Cancer Screening–Eligible Patients. JTO Clinical and Research Reports, 3(7), 100352.

16. Meza, R., **Cao, P.**, Jeon, J., Taylor, K. L., Mandelblatt, J. S., Feuer, E. J., & Lowy, D. R. (2022). Impact of Joint Lung Cancer Screening and Cessation Interventions Under the New Recommendations of the U.S. Preventive Services Task Force. *Journal of Thoracic Oncology*, *17*(1), 160–166. https://doi.org/10.1016/j.jtho.2021.09.011

17. Meza, R., Jeon, J., Toumazis, I., ten Haaf, K., **Cao, P.**, Bastani, M., Han, S. S., Blom, E. F., Jonas, D. E., Feuer, E. J., Plevritis, S. K., de Koning, H. J., & Kong, C. Y. (2021). Evaluation of the Benefits and Harms of Lung Cancer Screening With Low-Dose Computed Tomography: Modeling Study for the US Preventive Services Task Force. *JAMA*, *325*(10), 988. https://doi.org/10.1001/jama.2021.1077

18. Cadham, C. J.,* **Cao, P.**,* Jayasekera, J., Taylor, K. L., Levy, D. T., Jeon, J., Elkin, E. B., Foley, K. L., Joseph, A., Kong, C. Y., Minnix, J. A., Rigotti, N. A., Toll, B. A., Zeliadt, S. B., Meza, R., Mandelblatt, J., the CISNET-SCALE Collaboration (2021). Cost-Effectiveness of Smoking Cessation Interventions in the Lung Cancer Screening Setting: A Simulation Study. *JNCI: Journal of the National Cancer Institute*, *113*(8), 1065–1073. https://doi.org/10.1093/jnci/djab002. *Co-first authors

19. Toumazis, I., de Nijs, K., **Cao, P.**, Bastani, M., Munshi, V., ten Haaf, K., Jeon, J., Gazelle, G. S., Feuer, E. J., de Koning, H. J., Meza, R., Kong, C. Y., Han, S. S., & Plevritis, S. K. (2021). Cost-effectiveness Evaluation of the 2021 US Preventive Services Task Force Recommendation for Lung Cancer Screening. *JAMA Oncology*, *7*(12), 1833. https://doi.org/10.1001/jamaoncol.2021.4942

20. **Cao, P.**, Jeon, J., Levy, D. T., Jayasekera, J. C., Cadham, C. J., Mandelblatt, J. S., Taylor, K. L., & Meza, R. (2020). Potential Impact of Cessation Interventions at the Point of Lung Cancer Screening on Lung Cancer and Overall Mortality in the United States. *Journal of Thoracic Oncology*, *15*(7), 1160–1169. https://doi.org/10.1016/j.jtho.2020.02.008

21. Han, S. S., Chow, E., ten Haaf, K., Toumazis, I., **Cao, P.**, Bastani, M., Tammemagi, M., Jeon, J., Feuer, E. J., Meza, R., & Plevritis, S. K. (2020). Disparities of National Lung Cancer Screening Guidelines in the US Population. *JNCI: Journal of the National Cancer Institute*, djaa013. https://doi.org/10.1093/jnci/djaa013

22. Criss, S. D., **Cao, P.**, Bastani, M., ten Haaf, K., Chen, Y., Sheehan, D. F., Blom, E. F., Toumazis, I., Jeon, J., de Koning, H. J., Plevritis, S. K., Meza, R., & Kong, C. Y. (2019). Cost-Effectiveness Analysis of Lung Cancer Screening in the United States: A Comparative Modeling Study. *Annals of Internal Medicine*, *171*(11), 796. https://doi.org/10.7326/M19-0322

23. ten Haaf, K., Bastani, M., **Cao, P.**, Jeon, J., Toumazis, I., Han, S. S., Plevritis, S. K., Blom, E. F., Kong, C. Y., Tammemägi, M. C., Feuer, E. J., Meza, R., & de Koning, H. J. (2019). A comparative modeling analysis of risk-based lung cancer screening strategies. *JNCI: Journal of the National Cancer Institute*, djz164. https://doi.org/10.1093/jnci/djz164

24. Cadham, C. J., Jayasekera, J. C., Advani, S. M., Fallon, S. J., Stephens, J. L., Braithwaite, D., Jeon, J., **Cao, P.**, Levy, D. T., Meza, R., Taylor, K. L., & Mandelblatt, J. S. (2019). Smoking cessation interventions for potential use in the lung cancer screening setting: A systematic review and meta-analysis. *Lung Cancer*, *135*, 205–216. https://doi.org/10.1016/j.lungcan.2019.06.024

25. Jeon, J., Holford, T. R., Levy, D. T., Feuer, E. J., **Cao, P.**, Tam, J., Clarke, L., Clarke, J., Kong, C. Y., & Meza, R. (2018). Smoking and Lung Cancer Mortality in the United States From 2015 to 2065: A Comparative Modeling Approach. *Annals of Internal Medicine*, *169*(10), 684. https://doi.org/10.7326/M18-1250

26. Caverly, T. J., **Cao, P.**, Hayward, R. A., & Meza, R. (2018). Identifying Patients for Whom Lung Cancer Screening Is Preference-Sensitive: A Microsimulation Study. *Annals of Internal Medicine*, *169*(1), 1. https://doi.org/10.7326/M17-2561

27. Lau, Y. K., Caverly, T. J., **Cao, P.**, Cherng, S. T., West, M., Gaber, C., Arenberg, D., & Meza, R. (2015). Evaluation of a Personalized, Web-Based Decision Aid for Lung Cancer Screening. *American Journal of Preventive Medicine*, *49*(6), e125–e129. https://doi.org/10.1016/j.amepre.2015.07.027

28. Lau, Y. K., Caverly, T. J., Cherng, S. T., **Cao, P.**, West, M., Arenberg, D., & Meza, R. (2014). Development and Validation of a Personalized, Web-Based Decision Aid for Lung Cancer Screening Using Mixed Methods: A Study Protocol. *JMIR Research Protocols*, *3*(4), e78. https://doi.org/10.2196/resprot.4039

29. Xue, L., Wang, P., **Cao, P.**, Zhu, J., & Tao, W.A. (2014). Identification of Extracellular Signal-regulated Kinase 1 (ERK1) Direct Substrates using Stable Isotope Labeled Kinase Assay-Linked Phosphoproteomics. *Molecular & Cellular Proteomics*, *13*(11), 3199–3210. https://doi.org/10.1074/mcp.O114.038588

Manuscripts Under Review

1. Salgado, M.V., Cao, P., Jeon, J., Sanchez-Romero, L.M., Holford, T.R. Levy, D.T., Tam, J., Mejia, R., & Meza, R. (Submitted). Projected impact of smoking on mortality in Argentina from 2000 to 2100. A Maximum Potential Reduction in Premature Mortality analysis.

2. Skolnick S, Meza R, Jeon J, Cao P. (Revise and Resubmitted). Lung Cancer Incidence in Black Americans: fitting the Two-stage Clonal Expansion Model to Multi-Ethnic Cohort Data.

Manuscripts In Preparation

1. **Cao, P.**, Carroll, N.M., Jeon, J., Ritzwoller, D.P., Kong, C.Y. & Meza, R. (n.d.). Lung cancer recurrence patterns using SEER-Medicare and Kaiser Permanente data

2. **Cao, P.**, Jeon, J., Taylor, J.M.G., & Meza, R. (n.d.). A Multistage Carcinogenesis Framework to Study Cancer Recurrence.

3. **Cao, P.**, Jeon, J., & Meza, R. (n.d.). Cost-Effectiveness of Adaptive Schedules for Lung Cancer Screening.

4. **Cao, P.,** Jeon, J., Lee., J, de Nijs, K., Han, S.S., ten Haaf, K., de Koning, H., & Meza, R. (n.d.). Performance of duration-based lung cancer screening eligibility criteria: a comparative modeling study

Reports, Book Chapters & Opinions

1. Meza, R., Jeon, J., Toumazis, I., ten Haaf, K., Cao, P., Bastani, M., Han, S.S., Blom, E.F., Jonas, D., Feuer, E.J., Plevritis, S.K., de Koning, H.J., Kong, C.Y. (2021). Evaluation of the Benefits and Harms of Lung Cancer Screening With Low-Dose Computed Tomography: A Collaborative Modeling Study for the U.S. Preventive Services Task Force. AHRQ Publication No. 20-05266-EF-2. Rockville, MD: Agency for Healthcare Research and Quality.

Teaching Experience

Graduate Student Instructor, University of Michigan, Ann Arbor   **Fall 2016**
EPID 601: Principles and Methods of Epidemiology; Instructor: Hal Morgenstern
- Hosted interactive office hours to answer student questions
- Reviewed and graded midterm papers
- Created grading rubric for exams
- Graded exams and homework

Invited Presentations

Sep 2024	World Conference on Lung Cancer, San Diego, CA
	Cost-effectiveness of adaptive schedules for lung cancer screening: A modeling study (poster)
May 2024	CISNET-Lung Annual Meeting, Bethesda, MD
	Benefits and Harms of Duration-Only Screening Eligibility Criteria

	Lung cancer recurrence patterns in SEER-Medicare: An update
Dec 2023	CISNET-Lung Annual Meeting, Bethesda, MD

Lung cancer recurrence patterns in SEER-Medicare: An update
Dec 2023   CISNET-Lung Annual Meeting, Bethesda, MD
Lung cancer recurrence patterns in SEER-Medicare
Dec 2022   CISNET-Lung Annual Meeting, Bethesda, MD
A Multistage Carcinogenesis Framework to Study Cancer Recurrence
Dec 2022   SCALE 2022 Annual Grantee Meeting, Virtual
Cost-Effectiveness of A Telephone-based Smoking Cessation Randomized Trial in the Lung Cancer Screening Setting
Nov 2022   CISNET Annual Meeting Poster Session, Virtual
A Multistage Carcinogenesis Framework to Study Cancer Recurrence
Nov 2021   CISNET-Lung Annual Meeting, Virtual
Prediction of Smoking Intensity by Sociodemographic Factors
May 2020   CISNET-Lung Midyear Meeting, Virtual
Adaptive screening for Lung Cancer
Nov 2019   CISNET-Lung Annual Meeting, Bethesda, MD
Patterns of Smoking by Socio-demographic Factors Updates
Mar 2018   World Conference on Lung Cancer, Cape Town, South Africa
Smoking Disparities by Educational Attainment in the US
Oct 2017   CISNET-Lung Annual Meeting, Bethesda, MD
Smoking Patterns by Education and Race
Jun 2017   CISNET-Lung Midyear Meeting, Palo Alto, CA
Smoking Patterns by Education
Nov 2016   AACR-Risk Prediction Conference, Orlando, FL
Lung Cancer Screening Personalization Model

Leadership and Service

2022 CSBC/PS-ON/BD-STEP Junior Investigator Annual Meeting Planning Committee, National Cancer Institute **Mar 2022-Aug 2022**
- Collaborate with junior investigator representatives (JI) from various institutions to organize the 2022 CSBC/PS-ON/BD-STEP JI Annual Meeting for the NCI Division of Cancer Biology
- Decide programs, special sessions, and keynote speakers for the meeting
- Review and assign abstracts to appropriate sessions

Ongoing Research Support

NIH/NCI R01CA284646 (PI: Dejana Braithwaite, PhD)
07/05/2023-06/30/2028 $3,200,000
Advancing Precision Lung Cancer Surveillance and Outcomes in Diverse Populations (PLuS2)
The goal of the project is to evaluate the comparative effectiveness of lung cancer surveillance strategies, principally semi-annual versus annual CT surveillance, in relation to long-term outcomes among diverse patients with early-stage NSCLC within the U.S. population. This project will create unique data source to study, understand, and optimize lung cancer surveillance and downstream outcomes by leveraging multilevel data from electronic health records, claims, and system-level factors for patients with early-stage NSCLC who have completed curative-intent therapy. Validated lung cancer simulation models from the NCI's CISNET consortium will incorporate these data and generate long-term outcomes of various lung cancer surveillance strategies. This proposal responds directly to calls to improve patient-centered decision-making in lung cancer surveillance candidates for whom the net benefits of surveillance are currently uncertain.
Role: Co-Investigator

VA/HSR&D IIR 21-152 (PI: Tanner J. Caverly, MD, MPH)
05/01/2023 – 03/31/2027 $1,195,225
Redesigning Preventive Care Recommendations for Diverse Populations of Veterans

The long-term goal of the proposed research is to support optimal preventive care decisions for all Veterans. The overall objective of this project is to study an alternative guideline approach ("tailored" recommendations based on multivariable prediction) that can better support individualized prevention efforts. A second goal is to study the extent to which optimizing decisions for individuals can broaden the public health impact of preventive care programs within VA. We use lung cancer screening, statin use, and blood pressure treatment as case studies by adapting existing microsimulation models.
Role: Co-Investigator

NIH/NCI U01CA253858 (Coordinating Center PI: Rafael Meza, PhD)
09/08/2020-08/31/2026 $8,426,194
Comparative Modeling of Lung Cancer Prevention, Early Detection and Treatment Interventions
The overall goal of the project is to use comparative modeling analyses to assess the impact on lung cancer rates in the US and globally of 1) future tobacco control interventions in the ever-changing tobacco market landscape, 2) improvements in lung cancer screening and other emerging early detection strategies, 3) innovations in lung cancer treatment, and importantly, 4) their synergistic interactions.
Role: Co-Investigator

NIH/NCI R01CA249506 (PI: Dejana Braithwaite, PhD)
06/01/2020-05/31/2025 $2,500,000
Personalized screening for lung cancer: the importance of co-existing chronic conditions to clinical practice and policy
Eligible lung cancer screening candidates, because of their considerable smoking history, are at increased risk of lung cancer and thus should have the most to gain from screening; however, they may have chronic co-existing conditions and with limited life expectancy, which may decrease the net benefit of screening. In this project, we propose to collect and analyze data from real-world populations and settings to fully characterize the outcomes of lung cancer screening with LDCT, with a focus on evaluating the subpopulation of "marginal" LCS candidates. More specifically, we propose to leverage electronic health records and claims data for patients undergoing annual screening with LDCT in geographically diverse real-world settings. We will then use these observational data with validated models to project long-term lung cancer benefits and harms across populations with diverse levels of multimorbidity.
Role: Co-Investigator

Honors and Awards

2022 CISNET Annual Poster Session	Best Poster Award	Nov 2022
University of Michigan, Department of Epidemiology	Annual Poster Session, Second Place	Oct 2015
University of Michigan, Department of Epidemiology	Dean's Research Opportunity Award	2015-2016
Purdue University, College of Science	Alton D. and Juanita S. Andrews Memorial Mathematics Scholarship	2013-2014
Purdue University, College of Science	College of Science Scholarship	2013-2014