

# **Ira M. Longini, Jr.**

## **CURRICULUM VITAE**

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### **Education**

University of Minnesota, Minneapolis, Minnesota: Ph.D., Biometry/Biomathematics- 1977

University of Florida, Gainesville, Florida: M.S., Statistics/Operations Research- 1973

University of Florida, Gainesville, Florida: B.S., Engineering/Operations Research- 1971

### **Research and/or Professional Experience**

- 7/11- present Full Professor, Department of Biostatistics, Colleges of Public Health and Health Professions, and Medicine, University of Florida, Gainesville, FL
- 7/11- present Director, Center for Statistics and Quantitative Infectious Diseases (CSQUID), Emerging Pathogens Institute, University of Florida, Gainesville, FL
- 1/06- 6/11 Full Member, Vaccine and Infectious Disease Division, Fred Hutchinson Cancer Research Center, Seattle, WA.;  
Full Professor of Biostatistics, Department of Biostatistics, School of Public Health, University of Washington, Seattle, WA.
- 1/06 – 6/11 Director, Mathematical Modeling for HIV/STD Research, Center for AIDS Research, University of Washington, Seattle, WA.
- 7/06 – 7/07 Ross Prentice Professor of Biostatistics, Department of Biostatistics, School of Public Health and Community Medicine, University of Washington, Seattle, WA.
- 9/88- 12/05 Full Professor of Biostatistics (9/92- 12/05), Associate Professor (9/88- 8/92), Department of Biostatistics, Rollins School of Public Health, Emory University, Atlanta, Georgia

1/93- 7/93	Visiting Fellow, Isaac Newton Institute for Mathematical Sciences, University of Cambridge, Cambridge, England
8/84- 8/88	Assistant Professor of Biometry, Department of Statistics and Biometry, Emory University, Atlanta, Georgia
9/82- 7/84	Assistant Research Scientist in Epidemiology, Department of Epidemiology, University of Michigan, Ann Arbor, Michigan
9/82- 6/83	Visiting Assistant Professor of Statistics, Department of Statistics, University of Michigan, Ann Arbor, Michigan
1/80- 06/82	Postdoctoral Research Scholar in Biometry and Epidemiology, Department of Epidemiology, University of Michigan, Ann Arbor, Michigan
8/77- 12/79	Assistant Professor of Statistics, Department of Information and Systems, Universidad del Valle, Cali, Colombia, South America
8/77- 12/79	Postdoctoral Associate, International Center for Medical Research and Training, Cali, Colombia, South America

### Principal Areas of Interest

Biostatistics, stochastic processes, infectious disease epidemiology

### Publications in Peer Review Literature

1. Hodgson, T.J., K.E. Kilpatrick, and I.M. Longini: An integer quadratic programming approach to scheduling multispecialty clinics," *AIIE Transactions*, **9**, 69-74 (1977).
2. Longini, I.M., Ackerman, E. and Elveback, L.R.: An optimization model for influenza A epidemics. *Mathematical Biosciences* **38**,141-157 (1978).
3. Longini, I.M.: A chain binomial model of endemicity. *Mathematical Biosciences* **50**, 85-93 (1980).
4. Longini, I.M. and Koopman, J.S.: Household and community transmission parameters from final distributions of infections in households. *Biometrics* **38**, 115-126 (1982).
5. Longini, I.M., Koopman, J., Monto, A.S. and Fox, J.P.: Estimating household and community transmission parameters for influenza. *American Journal of Epidemiology* **115**, 736-751 (1982).
6. Longini, I.M., Koopman, J. and Monto, A.S.: Estimation procedures for transmission parameters from influenza epidemics: Use of serological data. *Voprosy Virusologii*, **No. 2**, 176-181 (1983). (In Russian.)
7. Longini, I.M.: Models of epidemics and endemicity in genetically variable host populations. *Journal of Mathematical Biology* **17**, 289-304 (1983).
8. Monto, A.S., Koopman, J.S., Longini, I.M. and Isaacson, R.E.: The Tecumseh Study. XII. Enteric agents in the community. *Journal of Infectious Diseases* **148**, 284-291 (1983).

9. Longini, I.M., Monto, A.S. and Koopman, J.S.: Statistical procedures for estimating the community probability of illness in family studies: Rhinovirus and influenza. *International Journal of Epidemiology* **13**, 99-106 (1984).
10. Longini, I.M., Higgins, M.W., Hinton, P.C., Moll, P.P. and Keller, J.R.: Environmental and genetic sources of aggregation of blood pressure in Tecumseh, Michigan. *American Journal of Epidemiology* **120**, 131-144 (1984).
11. Higgins, M.W. and Longini, I.M.: Discussion: The Tecumseh Community Health Study, in *Genetic Epidemiology of Coronary Heart Disease* (eds. D.C. Rao, R.C. Elston, L.H. Kuller, M. Feinleib, C. Carter, R. Havlik) Alan Liss, NY, 43-45 (1984).
12. Longini, I.M., Seaholm, S.K., Ackerman, E., Koopman, J.S. and Monto, A.S.: Simulation studies of influenza epidemics: Assessment of parameter estimation and sensitivity. *International Journal of Epidemiology* **13**, 496-501 (1984).
13. Longini, I.M., Higgins, M.W., Hinton, P.C., Moll, P.P. and Keller, J.R.: Genetic and environmental sources of aggregation of body mass in Tecumseh, Michigan. *Human Biology* **56**, 733-757 (1984).
14. Longini, I.M.: Models of the interaction of host genotypes and infectious disease. *Lecture Notes in Biomathematics* **57** (ed. V. Capasso). Springer-Verlag, New York, 158-163 (1985).
15. Monto, A.S., Koopman, J.S. and Longini, I.M.: The Tecumseh study of illness. XII. Influenza infection and disease, 1976-1981. *American Journal of Epidemiology* **121**, 811-822 (1985).
16. Rvachev, L.A. and Longini, I.M.: A mathematical model for the global spread of influenza. *Mathematical Biosciences*, 75:3 22 (1985).
17. Longini, I.M.: Modeling influenza epidemics, in *Options for the Control of Influenza, UCLA Symposia on Molecular and Cellular Biology, New Series, Volume 36* (eds. A.P. Kendal and P.A. Patriarca) Alan Liss, NY, 89-105 (1986).
18. Longini, I.M., Fine P.E.M. and Thacker, S.B.: Predicting the global spread of new infectious agents. *American Journal of Epidemiology* **123**, 383-391 (1986).
19. Longini, I.M.: The discrete-time general epidemic model: a synthesis. *Mathematical Biosciences* **81**, 19-41 (1986).
20. Vasil'eva, V.I., Rvachev, L.A., Belova, G.A., Mironav, G.A., Rvachev, L.L., Shashkov, V.A., Donovan, D., Fine, P., Longini, I. and Fraser, D.: Fundamentals of software support for an automatic control system for fast-spreading pandemics. *Programmirovaniye* **3**, 57-70 (1987). (In Russian.)
21. Gomez, H., Koopman, J.S., Addy, C.L., Zarate, M.L., Vaca, M.A., Longini, I.M., *et al.*: Dengue epidemics on the pacific coast of Mexico. *International Journal of Epidemiology* **17**, 178-186 (1988).
22. Haber, M., Longini, I.M. and Cotsonis, G.A.: Statistical analysis of infectious disease data. *Biometrics* **44**, 163-173 (1988).
23. Longini, I.M.: A mathematical model for predicting the geographic spread of new infectious agents. *Mathematical Biosciences* **90**, 367-383 (1988).

24. Longini, I.M. and Monto, A.S.: Efficacy of virucidal nasal tissue in interrupting familial transmission of respiratory agents: a field trial in Tecumseh, Michigan. *American Journal of Epidemiology* **128**, 639-644 (1988).
25. Longini, I.M., Koopman, J.S., Haber, M. and Cotsonis, G.A.: Statistical inference on risk-specific household and community transmission parameters for infectious diseases. *American Journal of Epidemiology* **128**, 845-859 (1988).
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29. Koopman, J.S., Monto, A.S. and Longini, I.M.: The Tecumseh study XVI. Family and community sources of rotavirus infection. *American Journal of Epidemiology* **130**, 760-768 (1989).
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32. Flanders, W.D. and Longini, I.M.: Estimating benefits of screening from observational studies. *Statistics in Medicine* **9**, 969-980 (1990).
33. Longini, I.M.: Modeling the decline of CD<sup>+</sup>4 T-lymphocyte counts in HIV-infected individuals. Letter to the Editor. *Journal of Acquired Immune Deficiency Syndromes* **9**, 930-931 (1990).
34. Longini, I.M., Haber, M.J. and Halloran, M.E.: Direct and indirect effects of vaccines: A note on the estimation of vaccine efficacy from outbreaks of acute infectious agents. *Boletin Medico Del Hospital Infantil de Mexico* **47**, 516-519 (1990). (In Spanish.)
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46. Longini, I.M., Halloran, M.E., Haber, M. and Chen, R.T.: Methods for estimating vaccine efficacy from outbreaks of acute infectious agents. *Statistics in Medicine* **12**, 249-263 (1993).
47. Longini, I.M., Clark, W.S. and Karon, J.: The effect of routine use of therapy on the clinical course of human immunodeficiency virus (HIV) infection in a population-based cohort. *American Journal of Epidemiology* **137**, 1229-1240 (1993).
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50. Mastro, T.D., Satten, G.A., Nopkesorn, T., Sangkharomya, S. and Longini, I.M.: Probability of female-to-male transmission of HIV-1 in Thailand. *Lancet* **343**, 204-207 (1994).
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52. Koopman, J.S. and Longini, I.M.: Ecological effects of individual exposures and non-linear disease dynamics in populations. *American Journal of Public Health* **84**, 836-842 (1994).
53. Longini, I.M.: Discussion of paper of Mollison D., Isham, V. and Grenfell, B. Epidemics: models and data. *Journal of the Royal Statistical Society A* **157**, 134-135 (1994).
54. Satten, G.A. and Longini, I.M.: Estimation of incidence of HIV infection using cross-sectional marker surveys. *Biometrics* **50**, 675-688 (1994).

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59. Longini, I.M., Halloran, M.E. and Haber, M.: Some current trends in estimating infectious disease vaccine efficacy. *Epidemic Models: Their Structure and Relation to Data* (ed. D. Mollison) Cambridge University Press, 394-403 (1995).
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66. Satten, G.A. and Longini, I.M.: Markov chains with measurement error: estimating the "true" course of a marker of HIV disease progression (with discussion). *Applied Statistics* **45**, 275-309 (1996).
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69. Longini, I.M., Datta, S. and Halloran, M.E.: Measuring vaccine efficacy for both susceptibility to infection and reduction in infectiousness for prophylactic HIV-1 vaccines. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology* **13**, 440-447 (1996).
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72. Longini, I.M., Sagatelian, K., Rida, W.N. and Halloran, M.E.: Optimal vaccine trial design when estimating vaccine efficacy for susceptibility and infectiousness from multiple populations. *Statistics in Medicine* **17**, 1121-1136 (1998).
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93. Halloran, M.E., Longini, I.M., Gaglani, M., Piedra, P.A., Chu, H., Herschler, G.B. and Glezen, W.P.: Estimating efficacy of trivalent, cold-adapted, influenza virus vaccine (CAIV-T) against influenza A (H1N1) and B using surveillance cultures. *American Journal of Epidemiology* **158**, 305-311 (2003).
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### **Manuscripts Submitted or in Preparation (partial list)**

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2. Antia R, Regoes R, Bergstrom C, Johnson P, Longini IM: How will different intervention strategies affect the evolution of the Ebola Virus? *PLoS Comp Biol* (Submitted).
3. Park JK, Mogasale V, Edmunds WJ, Chao DL, Lee JS, Matrajt L, Ochiai RL, Maskery B, Longini IM: A dynamic transmission model to predict the effectiveness of vi-conjugate vaccine in medium and high endemic settings. *PLoS Neglected Tropical Diseases* (Submitted).
4. Zhu Y, Yang Y, Longini IM, Halloran ME: Bayesian model selection for high-dimensional missing data, with application to infectious diseases. *Biometrics* (In preparation).
5. Flasche S, Jit M, Rodríguez-Barraquer I, Coudeville L, Recker M, Koelle K, Milne G, Hladish T, Perkins A, Dorigatti I, Cummings D, España G, Kelso J, Longini IM, Lourenco J, Pearson CAB, Reiner RC, Vannice K, Ferguson N: The long term safety, public health impact and cost effectiveness of a routine vaccination programme against dengue: consensus results of eight models *PLoS Medicine* (Submitted).
6. Gomez-Dantes H, Rojas, Manrique-Saide P, Che-Mendoza A, Feldstein L, Halloran ME, Longini IM, Pavia N, Barrera M. Design methodology for evaluating dengue control interventions: Baseline field studies in Yucatan, Mexico. *PLoS NTD* (Submitted).
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8. Kirpich A, Weppelmann TA, Yang Y, Morris JG, Longini IM: The great Haitian cholera outbreak: dynamic modeling, intervention strategies, and the future of the epidemic.



*Proceedings of the National Academy of Sciences* (Under review).

## **Books**

Halloran, M.E., Longini, I.M. and Struchiner, C.J.: *The Design and Analysis of Vaccine Studies*. Springer, New York, 387 pp. (2009).

Longini, I.M.: *Stochastic Processes for Biostatistics* (in process).

## **Monographs, Book Chapters, Commentaries, Non-peer-review Articles**

Longini, I.M. and Cuervo de Mesa, A.S.: "Lectures on Applied Stochastic Processes", Cali: Universidad del Valle (1978) pp. 175. (In Spanish.)

Longini, I.M.: "Notes on Time Series Analysis", Cali: Universidad del Valle (1979) pp. 47. (In Spanish and English.)

Longini, I.M. and Addy, C.: Report to the Global Epidemic Intelligence Service: "Analysis of Dengue Transmission in Mexico" (1987) pp. 56.

Longini, I.M.: Chain Binomial Models in *The Encyclopedia of Biostatistics*, **Volume 1**, (eds. P. Armitage and T. Colton), Wiley, NY, 593- 597 (1998).

Longini, I.M.: Invited commentary on C. P. Farrington, M. N. Kanaan and H. J. Gay: "Estimation of the basic reproductive number for infectious diseases from age-stratified serological survey data." *Appl. Statist.* **50**: 288-289 (2001).

Longini, I.M. (one of 28 signatories) : Ebola vaccine trial in Guinea. *Lancet* (letter) (2014) <http://www.thelancet.com/journals/lancet/article/PIIS0140-6736%2815%2960656-0/fulltext>

Longini IM, Egger M, Dean NE, Edmunds WJ, Henao-Restrepo AM: Ebola vaccination – Authors' reply. *Lancet* **386**: 2480 (2015).

## **Book Reviews**

*Spatial Aspects of Influenza Epidemics*. Cliff, A.D., Hagget, R. and Ord, J.K., Pion Limited, London, 1986: in *Mathematical Biosciences* **89**, 237-239 (1988).

*AIDS Epidemiology: A Quantitative Approach*. Brookmeyer, R. and Gail, M.H., Oxford University Press, New York, 1994: in *Science* **265**, 1602-1603 (1994).

## **Service**

Member of the Data Safety Monitoring Board for an open label post licensure trial to evaluate the safety and immunogenicity of indigenously manufactured killed bivalent (O1 and O139) whole cell oral cholera vaccine (Shanchol™), International Vaccine Institute.

## **Awards and Honors**

CDC Statistical Science Award "Best Theoretical Paper" published in 1994. Satten, G.A. and Longini, I.M.: Estimation of incidence of HIV infection using cross-sectional marker surveys. *Biometrics* **50**, 675-688 (1994).

CDC James H. Nakano Citation "for an outstanding scientific paper published in 1994." Mastro, T.D., Satten, G.A., Nopkesorn, T., Sangkharomya, S. and Longini, I.M.: Probability of female-to-male transmission of HIV-1 in Thailand. *Lancet* **343**, 204-207 (1994).

Howard M. Temin Award in Epidemiology for Scientific Excellence in the Fight Against HIV/AIDS (1995) for the article: Jacquez, J.A., Koopman, J.S., Simon, C.P. and Longini, I.M.: The role of primary infection in the epidemics of HIV infection in gay cohorts. *Journal of AIDS* **7**, 1169-1184 (1994).

Elected Fellow of the American Statistical Association, 1995

CDC Statistical Science Award "Best Applied Paper" published in 1996. Satten, G.A. and Longini, I.M.: "Markov chains with measurement error: estimating the "true" course of a marker of HIV disease progression (with discussion)". *Applied Statistics* **45**, 275-309 (1996).

Elected Fellow of the American Association for the Advancement of Science (AAAS), 2012

International Society for Vaccines: "Paper of the Year 2015." Henao-Restrepo, A-M, Longini IM, Egger M, Dean NE *et al.*: Efficacy of a recombinant live VSV-vectored vaccine expressing Ebola surface glycoprotein: Interim results from the Guinea ring vaccination cluster-randomized trial. *The Lancet*, **38**, 857–866 (2015). <http://www.isv-online.org/menu-annual-congress/previos-papers/2015-paper-of-the-months/171-paper-of-the-year-2015>

Science Magazine, one of the top 10 "Breakthrough of the Year" for 2015. Guinea Ebola ring vaccination trail: <http://www.sciencemag.org/news/2015/12/and-science-s-breakthrough-year>

Aspen Institute Italia Award for scientific research and collaboration between Italy and the United States, 2016. For outstanding research on Ebola transmission and control.

### **Ph. D. Students and Post-Docs**

Chaired Ph.D. Committee for 15 successful candidates  
Chaired M.S. Committee for 3 successful masters candidates  
Advised 8 Post Docs

### **Current Funding**

R37, NIH: *Methods for Evaluating Vaccine Efficacy*, Investigator.

U54 (Center), NIH: *Modeling of Infectious Disease Agent Study Centers for Excellence Center for Statistics and Quantitative Infectious Diseases*, Investigator and Lead of Modeling and Spatial Statistics Project.

R01, NIH: *Quantifying the Balance Between Vaccine-induced T Cell Protection and Pathology*, Investigator.

R01, NIH: *Regression, Phylogenetics, and Study Design in Infectious Disease Epidemiology*, Investigator.

R21 NIH: *Spatiotemporal Modeling for Surveillance Data of Multiple Pathogens*, Investigator.

Dengue Vaccine Initiative Grant: *Evaluation of Dengue Vaccines*, Principal Investigator.

World Health Organization Contract: *Statistical Analysis of Ebola*, Principal Investigator.

Sanofi Pasteur Grant: *Dengue Baseline Studies and Vaccination in State of the Yucatan, Mexico*, Principal Investigator.