

# Daniel Andrés Díaz-Pachón

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## Education

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<b>Biola University</b> <i>M.A. Science and Religion</i>	<b>La Mirada, California</b> 2021–
<b>Universidade de São Paulo</b> <i>Ph.D. Probability</i>	<b>São Paulo, Brasil</b> 2005–2009
<b>Universidad Nacional de Colombia</b> <i>B.S. Statistics (Minors: Mathematics, Biostatistics)</i>	<b>Bogotá, Colombia</b> 1998–2004
<b>Facultad de Teología y Estudios Religiosos</b> <i>B.A. Theology</i>	<b>Bogotá, Colombia</b> 1999–2005

## Experience

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<b>Research Assistant Professor</b> <i>Division of Biostatistics - University of Miami</i>	<b>Miami, Florida</b> 2015–2021
<b>Postdoctoral Research Associate</b> <i>Division of Biostatistics - University of Miami</i>	<b>Miami, Florida</b> 2011–2015
<b>Risk Analyst</b> <i>ACCION International</i>	<b>Bogotá, Colombia</b> 2008
<b>Consultant</b> <i>Universidad Nacional de Colombia</i>	<b>Bogotá, Colombia</b> 2003

## Edition and translation.....

<b>Book translator and editor</b> <i>Freelance</i>	2004–2013
More than 30 books translated or edited from English to Spanish for 3 different Publishing Houses (Vida Zondervan, Portavoz, and CLIE).	

## Honors and awards

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<b>NSF travel award</b> <i>Latin American Congress of Probability and Mathematical Statistics</i>	<b>Cartagena, Colombia</b> 2014
<b>NSF travel award</b> <i>Topics in Percolative and Disordered Systems, PASI</i>	<b>Buenos Aires, Argentina; Santiago, Chile</b> 2012

<b>CAPES merit-based scholarship, Ph.D. in Probability</b> <i>Instituto de Matemática e Estatística - Universidade de São Paulo</i>	<b>São Paulo, Brasil</b> 2009
<b>Mensa member</b> <i>High IQ society</i>	<b>Worldwide</b> 2004–
<b>NSF travel award</b> <i>Latin American Congress of Probability and Mathematical Statistics</i>	<b>Punta del Este, Uruguay</b> 2004
<b>Scholarship, B.A. in Theology</b> <i>Facultad de Teología y Estudios Religiosos</i>	<b>Bogotá, Colombia</b> 1999–2004
<b>Merit-based scholarship, B.S. in Statistics</b> <i>Universidad Nacional de Colombia</i>	<b>Bogotá, Colombia</b> 1999
<b>Best admission exam, B.S. in Statistics</b> <i>Universidad Nacional de Colombia</i>	<b>Bogotá, Colombia</b> 1998

## Languages

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**Spanish:** Native  
**English:** Fluent  
**Portuguese:** Fluent  
**Italian:** Basic  
**Greek:** Basic

## Publications

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### Journal articles.....

9. **Daniel Andrés Díaz-Pachón**, Ola Hössjer, and Robert J. Marks II. Is cosmological tuning fine or coarse? *Journal of Cosmology and Astroparticle Physics*, JCAP07(2021)020, 2021. [[arXiv](#)].
8. **Daniel Andrés Díaz-Pachón** and J. Sunil Rao. A simple correction for COVID-19 sampling bias. *Journal of Theoretical Biology*, 512:110556, 2021. [[arXiv](#)]. In the news: [Inventum](#).
7. **Daniel Andrés Díaz-Pachón** and Robert J. Marks II. Active Information Requirements for Fixation on the Wright-Fisher Model of Population Genetics. *BIO-Complexity*, 2020(4):1–6, 2020. [[arXiv](#)].
6. **Daniel Andrés Díaz-Pachón** and Robert J. Marks II. Generalized active information: Extensions to unbounded domains. *BIO-Complexity*, 2020(3):1–6, 2020. [[arXiv](#)].
5. **Daniel Andrés Díaz-Pachón**, Juan P. Sáenz, and J. Sunil Rao. Hypothesis testing with active information. *Statistics & Probability Letters*, 161:108742, 2020. [[arXiv](#)].
4. **Daniel Andrés Díaz-Pachón**, Juan P. Sáenz, J. Sunil Rao, and Jean-Eudes Dazard. Mode hunting through active information. *Applied Stochastic Models in Business & Industry*, 35(2):376–393, 2019. [[arXiv](#)].
3. **Daniel Andrés Díaz-Pachón**, Francisco J. P. Zimmermann, and Luis Alberto López-Pérez. F tests for the strip-split plot design. *Revista Brasileira de Biometria*, 34(2):279–303, 2016. [[arXiv](#)].

2. **Daniel Andrés Díaz-Pachón**. Percolation for the stable marriage of Poisson and Lebesgue with random appetites. *Stochastics*, 85(2):252–261, 2013. [[arXiv](#)].
1. **Daniel Andrés Díaz-Pachón**. A note on large deviations for the stable marriage of Poisson and Lebesgue with random appetites. *Journal of Theoretical Probability*, 25(1):77–91, 2012. [[arXiv](#)].

### Book chapters.....

1. **Daniel Andrés Díaz-Pachón**, Jean-Eudes Dazard, and J. Sunil Rao. Unsupervised Bump Hunting Using Principal Components. In S. Ejaz Ahmed, editor, *Big and Complex Data Analysis: Methodologies and Applications*, pp. 325–345. Springer International Publishing, 2017. [[arXiv](#)].

### Submitted papers.....

5. Lili Zhou, **Daniel Andrés Díaz-Pachón**, and J. Sunil Rao. Revisiting the estimation of Covid-19 prevalence: Implications for rapid testing. *Submitted*. 2021. [[medRxiv](#)]
4. Ola Hössjer and **Daniel Andrés Díaz-Pachón**. Assessing and Testing Fine-Tuning by Means of Active Information. *Submitted*. 2021.
3. Tianhao Liu, **Daniel Andrés Díaz-Pachón**, J. Sunil Rao, and Jean-Eudes Dazard. Mode hunting using pettiest components analysis. *Submitted* 2021. [[arXiv](#)].
2. Ola Hössjer, **Daniel Andrés Díaz-Pachón**, and J. Sunil Rao. Active information, missing data, and prevalence estimation. *Submitted*. 2021.
1. J. Sunil Rao, Tianhao Liu, and **Daniel Andrés Díaz-Pachón**. Back-to-the-future projections for COVID-19 surges. *Submitted*. 2021.

### Working papers.....

6. Lili Zhou, **Daniel Andrés Díaz-Pachón**, Ola Hössjer, J. Sunil Rao, Michail Sverchkov, and Danny Pfeiffermann. COVID-19 prevalence with not-missing-at-random data.
5. **Daniel Andrés Díaz-Pachón**, Ola Hössjer, and J. Sunil Rao. Active information, learning, and knowledge acquisition.
4. **Daniel Andrés Díaz-Pachón** and Alison Etheridge. Spatial  $\Lambda$ -Fleming-Viot process in discrete time.
3. **Daniel Andrés Díaz-Pachón**, Hao Ying, J. Sunil Rao, Juan P. Sáenz, and J-E. Dazard. Some curious new results on orthogonal transformations.
2. **Daniel Andrés Díaz-Pachón**. Poisson multi-matchings.
1. **Daniel Andrés Díaz-Pachón**. Continuum percolation in high dimensions with random radii.

### Dissertations.....

2. **Daniel Andrés Díaz-Pachón**. Advisor: Serguei Popov. Algumas propriedades de alocações para o processo pontual de Poisson. Doctoral dissertation (Portuguese). Instituto de Matemática e Estatística, Universidade de São Paulo, Brazil, 2009. [Tese](#).

1. **Daniel Andrés Díaz-Pachón**. Advisors: Luis Alberto López-Pérez, Francisco J. P. Zimmermann. Hipótesis lineales sobre medias para experimentos de franjas en parcelas divididas. Undergraduate dissertation (Spanish). Departamento de Estadística, Universidad Nacional de Colombia, 2004. [Tesis](#).

#### **Non-peer-reviewed articles**.....

1. **Daniel Andrés Díaz-Pachón**. On the Mind-Machine Problem. *Inference*. 5(2), May 2020. [[Open access](#)].

#### **Talks and presentations**

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15. *A simple correction for COVID-19 sampling bias*.  
[CLADAG2021](#) (Plenary talk).  
Firenze, Italy. September 10, 2021.
14. *Active Information and some applications*.  
Colloquium, Department of Mathematics, Florida International University.  
Miami, Fl, USA. October 24th, 2019.
13. *Allocations: Some results and some open problems*.  
Probability Workshops, Department of Statistics, Oxford University.  
Oxford, England. June 13, 2016.
12. *On the explanatory power of Principal Components*.  
XIII Latin American Congress of Probability and Statistics (CLAPEM).  
Cartagena, Colombia. September 25, 2014.
11. *Principal Components Analysis and Bump Hunting using PRIM*.  
Biostatistics Seminar, Biostatistics Division, University of Miami.  
Miami, Fl, USA. September 14, 2013.
10. *Optimization of PRIM under normality*.  
Sco 2013. Politecnico di Milano.  
Milan, Italy. September 10, 2013.

9. *Optimization of PRIM under normality.*  
Joint Statistical Meetings.  
Montreal, Canada. August 5, 2013.
8. *Allocations: What they are and some open problems.*  
Graduate Seminar, Department of Mathematics, University of Miami.  
Miami, FL, USA. March 30, 2012.
7. *Grandes desvíos en el matrimonio estable de Poisson y Lebesgue con apetitos aleatorios.*  
Statistics Seminar, Statistics Department, Universidad del Valle.  
Cali, Colombia. May 10, 2011.
6. *Large deviations for the stable marriage of Poisson and Lebesgue with random appetites.*  
Stochastic Processes Seminar, Mathematics Department, Universidad de los Andes.  
Bogotá, Colombia. September 22, 2010.
5. *Tail bounds for the stable marriage of Poisson and Lebesgue with random appetites.*  
Seminar of theory and methods, Statistics Department, Universidad Nacional de Colombia.  
Bogotá, Colombia. September 6, 2010.
4. *Some properties of allocations with random appetites (Poster).*  
13th Brazilian Probability School.  
Maresias, SP, Brazil. August 2–8, 2009.
3. *Percolación para asignaciones estables con apetitos aleatorios.*  
Stochastic Processes Workshop, Mathematics Department, Universidad de los Andes.  
Bogotá, Colombia. April 9, 2008.
2. *Percolación para el matrimonio estable de Poisson y Lebesgue con apetitos aleatorios.*  
Seminar of theory and methods, Statistics Department, Universidad Nacional de Colombia.  
Bogotá, Colombia. March 30, 2008.

1. *Hipótesis lineales sobre medias para experimentos de franjas en parcelas divididas.*  
IX Latin American Congress of Probability and Statistics (CLAPEM).  
Punta del Este, Uruguay. March 22–26, 2004.

## Funded Research

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- AWD-005895.  
**Title:** Measuring Fine-Tuning Using Maximum Entropy and Active Information.  
**Funding Agency:** Walter Bradley Center for Natural and Artificial Intelligence.  
**Role:** Principal Investigator: 25% effort.  
**Dates:** 06/01/2020 – 06/31/2021.
- GR008159 NHLBI 7 R01HL 126947-03-669406  
**Title:** Biomarkers of response to azacytidine in myelodysplastic syndromes.  
**Funding Agency:** NIH-NHLBI.  
**Role:** Co-Investigator: 25% effort.  
**Dates:** 06/01/2018 – 05/31/2019.
- R01 CA16050593A1  
**Title:** Survival Bump Hunting for Finding Informative Subgroups in High Dimensional Data.  
**Funding Agency:** NIH-NCI.  
**Role:** Co-Investigator: 30% effort.  
**Dates:** 03/01/2013 – 02/28/2017.

## Teaching

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### Instructor.....

#### **Advanced Survival Analysis**

*Ph.D. in Biostatistics - University of Miami*

Martingales approach.

Created and taught.

**Miami, Florida, USA**

*Fall, 2013–2016, 2018, 2020*

#### **Advanced Statistics and Probability**

*Ph.D. in Biostatistics - University of Miami*

Measure-theoretic approach to asymptotics.

Created and taught.

**Miami, Florida, USA**

*Spring 2013–2021*

#### **Intermediate Probability**

*Ph.D. in Biostatistics - University of Miami*

Stochastic processes for biostatisticians.

Created and taught.

**Miami, Florida, USA**

*Fall, 2017, 2019, 2021*

#### **Topics in Biostatistical Research**

*M.S./Ph.D. in Biostatistics - University of Miami*

Foundations of mathematics, statistics, information, computation, and science.

Created and taught.

**Miami, Florida, USA**

*Spring, and Fall 2017–current*

**Introductory Probability**

*M.S./Ph.D. in Biostatistics - University of Miami*

Calculus based.

Created and taught.

**Miami, Florida, USA**

*Fall, 2020–current*

**Probability and Statistics**

*Undergraduate - Instituto Politécnico Gran Colombiano*

Counting approach.

**Bogotá, Colombia**

*Spring and Fall, 2004*

**Teaching Assistant**.....**Probability**

*Instituto de Matemática e Estatística - Universidade de São Paulo*

Calculus based.

**São Paulo, Brasil**

*2007*

**Administrative**

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**M.S. Biostatistics Committee**

*Division of Biostatistics - University of Miami*

**Miami, Florida, USA**

*2015–current*

**Editorial**

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o **Peer-reviewer:**

IEEE Transactions on Systems, Man, and Cybernetics, IEEE Transactions on Information Theory.

o **Associate Editor:**

Revista Colombiana de Estadística.

2013–current.

o **Scientific Committee:**

Comunicaciones en estadística

2008–current.

**Certifications**

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o **Curso anual de novela.** Annual course on creative writing. *Escuela Cursiva.*

o **Taller de poesía con Carlos Pardo.** Four-months poetry course. *Escuela Cursiva.*

**Interests**

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Creative writing and poetry.

Crossfit.

## References

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### **J. Sunil Rao**

Director, Division of Biostatistics,  
Department of Public Health Sciences, University of Miami.  
Phone: +1 (305) 243 4252  
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### **Robert J. Marks II**

Distinguished Professor,  
Electrical & Computer Engineering, Baylor University.  
Phone: +1 (254) 710 7302  
Email: Robert\_Marks@baylor.edu

### **Ola Hössjer**

Professor,  
Department of Mathematics, Stockholm University.  
Phone: +46 706721218  
Email: ola@math.su.se