Lemann Brazil Research Fund
2018 Awardees

FLAVIO CALMON, Assistant Professor of Electrical Engineering, John A. Paulson School of Engineering and Applied Sciences
"Bridging Electrical Engineering and Machine Learning Education in Brazil"
Collaborator: José Cândido Silveira Santos Filho (Universidade Estadual de Campinas)

The next generation of engineers will need to master machine learning (ML) and, more broadly, data science. Investment in ML research and education in Brazil will empower the country to face the engineering challenges of the future. The goal of this proposal is to advance both teaching and research of ML in Brazilian electrical engineering (EE) schools, preparing young Brazilians for the 21st-century data-driven engineering landscape. Specifically, this project aims to (i) develop pedagogical methods for adding ML to the engineering curriculum, focusing on producing educational material that is relevant to the social reality of Brazilian students, and (ii) foster state-of-the-art research at the intersection of ML and EE in Brazil. Expected outcomes of the proposal include a summer school taught in Brazil on ML for engineers, and freely available, online pedagogical material in both Portuguese and English.

STEPHANIE JONES, Professor of Education, Harvard Graduate School of Education
"SEL Kernels for Brazil ECE: A Low-Cost, Evidence-Based, and Scalable Approach to Social and Emotional Learning (SEL) in Brazilian Early Childhood Settings"
Co-investigators: Dana McCoy (Harvard Graduate School of Education); Alexandra Brentani (Faculdade de Medicina, University of São Paulo)
Collaborators: Ana Luiza Colagrossi (Faculdade de Medicina, University of São Paulo); Rebecca Bailey and Jennifer Kahn (Harvard Graduate School of Education)

Children's social-emotional skills - including their ability to pay attention, understand and respond to emotions, and get along with others - are central to life-long learning and wellbeing. The present study aims to build these skills in Brazilian early childhood settings by implementing a set of social-emotional learning (SEL) "kernels" of practice. SEL kernels are short (5-10 minute), easy-to-implement, evidence-based activities and strategies that teachers can flexibly use in their classrooms to support the specific needs of their students. In this study, we will develop and evaluate SEL kernels that are specific to the Brazilian cultural and policy context. Our ultimate goal is to deploy these SEL kernels across a wide array of early childhood settings in Brazil in order to improve classroom, teacher, and student wellbeing.

CHARLES NELSON, Professor of Pediatrics and Neuroscience, Harvard Medical School and Professor of Education, Harvard Graduate School of Education
"Early Institutionalization Intervention Impact Project"
Co-investigators: Nathan A. Fox (University of Maryland); Charles H. Zeanah (Tulane University School of Medicine)
Collaborator: Edson Amaro Jr. (PENSI Institute)

The Early Institutionalization Intervention Impact Project will document and compare the impact of institutional care on early childhood development to that of high-quality foster care. The first phase of the project will include the creation of a developmental profile of 100 children under age 2, that are currently living in institutions. Children will participate in an initial screening assessment, and up to three follow-up assessments at 12 months, 24 months and 36 months. This information will provide a comparison for second phase of the study that will include a two-armed intervention, in which children removed from their homes are placed, at random, in either enhanced institutional care or high-quality foster care. Children in the second phase of the study will participate in an initial screening assessment and follow-up assessments at the same time points.

GAUTAM RAO, Assistant Professor of Economics, Faculty of Arts and Sciences
"Overcoming Barriers to Adoption of Effective Municipal Policies"
Co-investigators: Jonas Hjort (Columbia University); Diana Moreira (University of California, Davis); Juan Francisco Santini (Pontifical Catholic University of Rio de Janeiro)

We leverage a unique partnership to conduct a large-scale field experiment with thousands of municipal governments in Brazil. Our previous work provides evidence that Brazilian mayors have substantial demand for policy research, and that their beliefs about policy effectiveness respond to evidence. Yet, providing such information is not sufficient to translate into actual policy change. In this project, we propose to tackle two barriers which might prevent research information from translating into effective policy: (i) failures of information-flow within municipal governments, and (ii) a lack of technical ability to implement even relatively low-cost policies at scale.

MEREDITH ROWE, Associate Professor of Education, Harvard Graduate School of Education
"Parent-child Interaction and Child Language Development in Low-income Families in Brazil"
Co-investigator: Guilherme Vanoni Polanczyk (University of São Paulo)

This study aims to understand how low-income mothers in Brazil communicate with their infants and what aspects of that communication predict children's language development. Specifically, we aim to identify the extent of variation in the quantity and quality of language input that mothers in a poor urban area in Brazil use during a play interaction with their 12-month olds. A second aim is to determine what factors (e.g., depression, education, living conditions) predict variation in mothers' input with children. The third aim is to determine what features of mothers' input at child age 12-months predict children's cognitive outcomes one year later. And, finally, a fourth aim is to understand the similarities and differences in parent input in Brazil versus the US.

CATHERINE SNOW, Patricia Albjerg Graham Professor of Education, Harvard Graduate School of Education
"Improving Literacy Outcomes in Brazil by Expanding Teachers' Instructional Repertoires"
Co-investigator: Renan de Almeida Sargiani (University of São Paulo)

National and international evaluations show that Brazilian children are performing well below the expected level for age and grade in literacy. This can be attributed in part to the exclusive reliance on whole-language literacy teaching methods in many schools. Schools are widely committed to using the traditional, whole-language focused literacy curriculum, but many students need more explicit teaching about how letters and sounds map onto one another. We propose to develop and test a supplementary program that provides such teaching in a way that complements, rather than displaces, the current curriculum. Expanding teachers' instructional repertoires can improve literacy outcomes without generating rejection of the novel methods.

ELIZABETH SPELKE, Marshall L. Berkman Professor of Psychology, Faculty of Arts and Sciences
"A Preschool Intervention in Brazil to Enhance Poor Children's School Readiness"
Co-investigators: Chrissie Ferreira de Carvalho and Nara Cortes Andrade (Universidade Catolica de Salvador); Jose Neander Silva Abreu (Federal University of Bahia)

Research in the cognitive and brain sciences provides evidence for numerical and geometrical abilities that are present at birth, that function throughout life in people throughout the world, and that serve as a basis for children's learning of school mathematics. Can these findings be harnessed to make education in mathematics more effective, especially for poor children? We propose to develop and test two games-based curricula that aim to enhance poor Brazilian preschool children's school readiness. One curriculum focuses on developing children's numerical and geometrical skills. The other curriculum focuses on developing children's abilities to learn from others. We propose to develop the curricula at Harvard and test them in a small-scale study in preschools in Salvador, Brazil. This test will prepare the ground for a full-scale, randomized controlled evaluation of a scalable curriculum, inexpensive and easy to implement curriculum preparing poor preschool children in Bahia for learning math.