SAS® GLOBAL FORUM 2018

USERS PROGRAM

April 8 - 11
Colorado Convention Center | Denver, CO

sasglobalforum.com
#SASGF
Welcome to SAS® Global Forum

My passion is education. As a professor, I marvel at the way my students look at the world - always curious, eager to learn. It is an honor and a privilege to teach our next generation. And it’s equally an honor to serve as your 2018 Conference Chair for SAS Global Forum.

This conference is an educational journey. We have assembled more than 600 sessions and a remarkable lineup of invited speakers, contributed papers, hands-on workshops, tutorials, table talks, e-posters and more. We encourage you to make the most of your experience - explore and learn.

My deep appreciation goes out to our sponsors, who enrich SAS Global Forum with innovative technologies, vital services and enabling education. Please visit with our sponsors to discuss your business and learn how they may be instrumental in your future success.

The scope of this conference is incredible. Our conference team has worked tirelessly to ensure a remarkable experience. I extend a heartfelt thank you to the team and the hundreds of volunteers from the SAS users community. And I want to acknowledge the enthusiastic support from SAS - as they partner with us to ensure the conference success now and in the future.

If you see me exploring The Quad, building creative tool kits for STEM students at our charity activity, or relaxing at Mile High Stadium for our Kick Back Party - please stop to say hello. Together, let’s make this conference an extraordinary learning experience for all who attend!

Sincerely,

Dr. Goutam Chakraborty
Chair of SAS Global Forum 2018
SAS Professor of Marketing Analytics
Director, MS in Business Analytics
Oklahoma State University

Cover photo credit: Scott Dressler-Martin and VISIT DENVER
Your SAS® Global Forum 2018 Conference Team

Goutam Chakraborty, Chair  
Oklahoma State University

Scott Bass  
Independent SAS Consultant

Christopher (Chris) Blake  
Nova Limited

Bob Bolen  
Independent SAS Consultant

Nancy Brucken  
inVentiv Health

Natasha (Tasha) Chapman  
Oregon Department of Consumer and Business Services

MaryAnne DePesquo  
Health Care Consultant – Independent

Harry Droogendyk  
Stratia Consulting Inc.

Dina Duhon  
Scotiabank

Jacqueline Fraga  
SulAmérica Seguros

Troy Martin Hughes  
Datamesis Analytics

Scott Leslie  
MedImpact Healthcare Systems Inc.

Pete Lund  
Looking Glass Analytics

Miriam McGaugh  
Oklahoma State University

Lisa Mendez  
IQVIA Government Solutions

Jennifer Priestley  
Kennesaw State University

Kerri Roselli  
AbbVie

Deanna Schreiber-Gregory  
Henry M. Jackson Foundation for the Advancement of Military Medicine

Shavonne Standifer  
Truman Medical Center

Diana Suhr  
SIR Consulting

Stephanie Thompson  
Datamum

Dirk Van den Poel  
Ghent University

Fei Wang  
McDougall Scientific Ltd.

Richann Watson  
DataRich Consulting

Jeanina (Nina) Worden  
Santen
# Agenda at a Glance

**Sunday, April 8**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 a.m. – Noon</td>
<td>Pre-Conference Tutorials  <strong>EXTRA-FEE EVENT</strong></td>
<td>Street Level - Meeting Rooms 400’s and 500’s</td>
</tr>
<tr>
<td>9:00 a.m. – Noon</td>
<td>Pre-Conference SAS Certification Exams  <strong>EXTRA-FEE EVENT</strong></td>
<td>Street Level - Meeting Room 406</td>
</tr>
<tr>
<td>Noon – 4:30 p.m.</td>
<td>Pre-Conference Tutorials  <strong>EXTRA-FEE EVENT</strong></td>
<td>Street Level - Meeting Rooms 400’s and 500’s</td>
</tr>
<tr>
<td>1:00 – 4:00 p.m.</td>
<td>Pre-Conference SAS Certification Exams  <strong>EXTRA-FEE EVENT</strong></td>
<td>Street Level - Meeting Room 406</td>
</tr>
<tr>
<td>1:30 – 3:00 p.m.</td>
<td>Student Session</td>
<td>Hyatt Regency Denver - Level 3 - Mineral Hall</td>
</tr>
<tr>
<td>1:30 – 3:00 p.m.</td>
<td>Professor Session</td>
<td>Hyatt Regency Denver - Level 3 - Mineral Hall</td>
</tr>
<tr>
<td>3:00 – 4:15 p.m.</td>
<td>Academic Summit</td>
<td>Dr. Temple Grandin, Colorado State University Professor &lt;br&gt;Hyatt Regency Denver - Level 4 - Capitol Ballroom</td>
</tr>
<tr>
<td>4:30 – 6:00 p.m.</td>
<td>First-Timers’ Experience</td>
<td>See page 9</td>
</tr>
<tr>
<td>4:30 – 6:30 p.m.</td>
<td>The Quad and Charity Activity</td>
<td>Upper Level - Exhibit Hall D and C</td>
</tr>
<tr>
<td>7:00 – 8:30 p.m.</td>
<td>General Session: Opening Session</td>
<td>Street Level - Bellco Theatre</td>
</tr>
<tr>
<td>8:30 – 10:00 p.m.</td>
<td>Welcome Reception</td>
<td>Street Level - Grand Concourse</td>
</tr>
</tbody>
</table>

*This schedule is subject to change. Please visit the mobile app for the most up-to-date schedule.*
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<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>7:15 - 8:15 a.m.</td>
<td>Light Breakfast and Charity Activity</td>
<td>Upper Level - Exhibit Hall C</td>
</tr>
<tr>
<td>8:30 - 10:00 a.m.</td>
<td>General Session: Technology Connection</td>
<td>Street Level - Bellco Theatre</td>
</tr>
<tr>
<td>10:00 a.m. - 3:30 p.m.</td>
<td>The Quad</td>
<td>Upper Level - Exhibit Hall D</td>
</tr>
<tr>
<td>10:30 a.m. - 3:30 p.m.</td>
<td>Student Symposium Presentations</td>
<td>Street Level - Meeting Room 210</td>
</tr>
<tr>
<td>10:30 a.m. - 5:30 p.m.</td>
<td>Breakout Sessions</td>
<td>Street Level - Meeting Rooms 200’s, 300’s, 400’s and 500’s Lower Level - Mile High Ballroom - Theaters A-D and Table Talks 1-2</td>
</tr>
<tr>
<td>Noon - 2:00 p.m.</td>
<td>Lunch and Charity Activity</td>
<td>Upper Level - Exhibit Hall C</td>
</tr>
<tr>
<td>5:30 - 7:00 p.m.</td>
<td>Happy Hour Reception in The Quad</td>
<td>Upper Level - Exhibit Hall D</td>
</tr>
</tbody>
</table>
## Tuesday, April 10

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>7:15 – 8:15 a.m.</td>
<td>Light Breakfast and Charity Activity</td>
<td>Upper Level - Exhibit Hall C</td>
</tr>
<tr>
<td>8:30 – 9:30 a.m.</td>
<td>General Session: Keynote</td>
<td>Jon Meacham, Presidential Historian</td>
</tr>
<tr>
<td></td>
<td>Street Level - Bellico Theatre</td>
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</tr>
<tr>
<td>9:30 a.m. – 5:30 p.m.</td>
<td>The Quad</td>
<td>Upper Level - Exhibit Hall D</td>
</tr>
<tr>
<td>10:00 a.m. – 5:30 p.m.</td>
<td>Breakout Sessions</td>
<td>Street Level - Meeting Rooms 200’s, 300’s, 400’s and 500’s</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lower Level - Mile High Ballroom - Theaters A-D and Table Talks 1-2</td>
</tr>
<tr>
<td>Noon – 2:00 p.m.</td>
<td>Lunch and Charity Activity</td>
<td>Upper Level - Exhibit Hall C</td>
</tr>
<tr>
<td>8:00 – 11:00 p.m.</td>
<td>Kick Back Party</td>
<td>Mile High Stadium</td>
</tr>
</tbody>
</table>
Wednesday, April 11

7:15 – 8:15 a.m. Light Breakfast
Lower Level – Four Seasons Ballroom

8:30 – 9:45 a.m. General Session: Keynote
Peyton Manning, Legendary NFL Quarterback
Street Level – Bellco Theatre

10:00 a.m. – 1:30 p.m. Breakout Sessions
Street Level – Meeting Rooms 200’s, 300’s, 400’s and 500’s
Lower Level – Mile High Ballroom – Theaters A-D and Table Talks 1-2

2:30 – 4:30 p.m. Post-Conference SAS Certification Exams EXTRA-FEE EVENT
Street Level – Meeting Room 102

2:30 – 6:00 p.m. Post-Conference Training EXTRA-FEE EVENT
Street Level – Meeting Rooms 400’s and 500’s

Thursday, April 12

8:00 a.m. – 5:00 p.m. Post-Conference Training EXTRA-FEE EVENT
Street Level – Meeting Rooms 400’s and 500’s
General Sessions
Street Level – Bellco Theatre

Opening Session
Sunday, April 8 | 7:00 – 8:30 p.m.

As the official welcome to the conference, this is where SAS practitioners, experts and leaders come together. Jim Goodnight, SAS co-founder and CEO, and SAS executives will share their vision for the future. Frontline leaders from successful organizations will reveal how they approach today’s business challenges. Hear moving stories about how analytics is creating a better world. Be inspired by the conference chair, Goutam Chakraborty, as he shares his thoughts on the important relationship between academia and business. And a surprise entertainer will ignite your curiosity.

Technology Connection
Monday, April 9 | 8:30 – 10:00 a.m.

Get face-to-face with new technology and the people who create it. On this fast-paced journey, Oliver Schabenberger, SAS Executive Vice President, Chief Operating Officer and Chief Technology Officer, and his guests will share what it means to innovate on the edge of what’s possible. Hear about an emerging tech partnership with SciSports, a sports analytics company. Learn how SAS artificial intelligence and machine learning technologies are helping to improve everyday life – from patient care to accessibility for visually impaired professionals.

Keynote: Jon Meacham, Presidential Historian
Tuesday, April 10 | 8:30 – 9:30 a.m.


Keynote: Peyton Manning, Legendary NFL Quarterback
Wednesday, April 11 | 8:30 – 9:45 a.m.

Peyton Manning’s career spanned 18 NFL seasons in which he became the all-time leader in both touchdowns and passing yards. With two Super Bowl wins to his credit, he can inspire any team – including yours – to victory! Manning will be joined by Randy Guard, SAS Executive Vice President and Chief Marketing Officer, for an inspiring conversation about leadership, motivation, teamwork and decision making.
Academic Summit
Sunday, April 8 | 3:00 – 4:15 p.m. | Hyatt Regency - Level 4 – Capitol Ballroom

Together, industry leaders and academia can change the future of data science and analytics. We’ll hear an inspiring keynote presentation from Dr. Temple Grandin: The World Needs All Kinds of Minds. Dr. Grandin is a Professor of Animal Science at Colorado State University, and a consultant to the livestock industry on animal behavior. She is also one of the first individuals on the autism spectrum to publicly share insights from her own personal experience with autism. For those interested in achieving collaboration – academic faculty, staff, students and industry representatives – we hope you’ll join us for this session and networking opportunity.

First-Timers’ Experience
Sunday, April 8
As a first-timer, you want to know the conference basics. This self-paced experience gives you the information you need.

• **Open House**: 4:30 – 5:15 p.m.
  See staff members in orange ASK ME T-shirts to help you navigate the conference space.

• **The Quad**: 4:30 – 6:30 p.m.
  Visit to learn about the latest technologies. Tours will be given at 5:00 and 5:30 p.m.

• **Agenda Planning**: 4:30 – 6:00 p.m.
  Stop by Theater 1 on the Lower Level to get guidance on how to filter through hundreds of sessions to build the perfect agenda for you.

• **The Den**: 8:30 – 10:00 p.m.
  Meet first time attendees during the Welcome Reception.

In addition, you can sit at the designated first-timer tables at breakfasts and lunches.

Charity Activity: Guide the Next STEM Generation
Sunday, April 8 – Tuesday, April 10 | Upper Level – Exhibit Hall C

Be part of encouraging curiosity and a love of learning for students. Working with RAFT Colorado (Resource Area for Teaching), we can help educators change a child’s learning experience through hands-on education items collected from the community. RAFT repurposes materials as creative tools for teaching STEM – inspiring the next generation of thinkers, innovators, problem solvers and creators. So build a kit (or two) while at SAS Global Forum to support Denver-area youths.
Session Kiosks

Street Level – Grand Concourse
Find the most up-to-date sessions and identify the right ones for you. Visit one of our Session Kiosks located near Conference Information at 400’s and 500’s hallways.

Become a SAS® Global Forum Leader

Monday, April 9 – Tuesday, April 10 | Street Level – Grand Concourse
SAS Global Users Group partners with SAS to produce SAS Global Forum, the pre-eminent worldwide SAS users conference. Be a part of this fantastic team. Provide your talents and enthusiasm. Stop by and learn how you can get involved.

Kick Back Party

Tuesday, April 10 | 8:00 – 11:00 p.m. | Mile High Stadium
Join us for our Kick Back Party, an exclusive experience for SAS Global Forum attendees. Take a journey through the magnificent seasons experienced in Colorado, each one bringing new and exciting adventures. But you won’t have to spend a year here to enjoy them all. That’s because we’re transforming Mile High Stadium into a year-round experience. Enjoy fun photo booths, seasonal food, beverages and entertainment.

Entrance requires your conference name badge and a photo ID.

Buses will arrive at 7:30 p.m. Choose a location convenient to your conference hotel.
• Colorado Convention Center (Landmark: Blue Bear statue)
• Corner of Curtis Street and 15th Street (Landmarks: Sam’s No. 3 and The Curtis Hotel)
• On 17th Street, between Arapahoe Street and Curtis Street (Landmarks: Protein Bar & Kitchen and Vectra Bank)
• Glenarm Place and 16th Street (Landmarks: Paramount Theatre and Bayou Bob’s)

KICK BACK PARTY
Four seasons. One night.
Logistics

Registration
Street Level – Lobby F
Saturday, April 7  3:00 – 6:00 p.m.
Sunday, April 8  7:00 a.m. – 6:00 p.m.
Monday, April 9  7:00 a.m. – 6:00 p.m.
Tuesday, April 10  7:00 a.m. – 6:00 p.m.
Wednesday, April 11  7:00 a.m. – Noon

Conference Information Desks
Street Level – Grand Concourse
Sunday, April 8  3:30 – 7:00 p.m.
Monday, April 9  8:00 a.m. – 6:00 p.m.
Tuesday, April 10  8:00 a.m. – 6:00 p.m.
Wednesday, April 11  8:00 a.m. – Noon

Conference Meals and Receptions

• Welcome Reception
  Sunday, April 8, from 8:30 to 10:00 p.m. in Street Level – Grand Concourse.

• Light Breakfast
  Monday, April 9, and Tuesday, April 10, from 7:15 to 8:15 a.m. in Upper Level – Exhibit Hall C.
  Wednesday, April 11, from 7:15 to 8:15 a.m. in Lower Level – Four Seasons Ballroom (NEW LOCATION).

• Lunch
  Monday, April 9, and Tuesday, April 10, from noon to 2:00 p.m. in Upper Level – Exhibit Hall C.
  You may choose to attend sessions, sit down for lunch, take lunch with you or network at your convenience.

• Happy Hour Reception
  Monday, April 9, from 5:30 to 7:00 p.m. in The Quad.

• Kick Back Party
  Tuesday, April 10, from 8:00 to 11:00 p.m. at Mile High Stadium.

Refreshments

<table>
<thead>
<tr>
<th>Dates</th>
<th>Morning</th>
<th>Locations</th>
<th>Afternoon</th>
<th>Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday, April 9</td>
<td>10:00 – 10:30 a.m.</td>
<td>Street Level – Grand Concourse, Upper Level – Exhibit Hall D (The Quad)</td>
<td>3:45 – 4:15 p.m.</td>
<td>Street Level – Grand Concourse</td>
</tr>
<tr>
<td>Tuesday, April 10</td>
<td>9:30 – 10:00 a.m.</td>
<td>Street Level – Grand Concourse, Upper Level – Exhibit Hall D (The Quad)</td>
<td>3:15 – 3:45 p.m.</td>
<td>Street Level – Grand Concourse, Upper Level – Exhibit Hall D (The Quad)</td>
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<tr>
<td>Wednesday, April 11</td>
<td>9:45 – 10:15 a.m.</td>
<td>Street Level – Grand Concourse</td>
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Learning Lab
Street Level – Meeting Room 102
Our on-site Learning Lab offers you the opportunity to explore more than 25 e-learning courses for free. So if learning at your own pace is your thing, visit the Learning Lab - where you dictate the pace.

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<thead>
<tr>
<th>Monday</th>
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<td>10:00 a.m. - 1:00 p.m.</td>
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</table>

The Quad
Upper Level – Exhibit Hall D
The Quad is a gathering place – a casual and interactive space that invites both user and executive attendees to mingle, share and learn from other SAS enthusiasts. It offers classic favorites – like demos – as well as new features you’ll want to check out.

<table>
<thead>
<tr>
<th>Sunday, April 8</th>
<th>Monday, April 9</th>
<th>Tuesday, April 10</th>
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<tbody>
<tr>
<td>4:30 – 6:30 p.m.</td>
<td>10:00 a.m. - 3:30 p.m.</td>
<td>9:30 a.m. - 5:30 p.m.</td>
</tr>
<tr>
<td>5:30 - 7:00 p.m.</td>
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Conference Mobile App
Make your conference experience a breeze. The app lets you navigate the conference with interactive maps, get the latest session content and connect with other conference attendees. To download, search for CrowdCompass AttendeeHub in your device’s app store. When you open the app, search for SAS Global Forum. The event password is SASGF18.

Mobile App Support - Street Level - Grand Concourse
<table>
<thead>
<tr>
<th>Sunday, April 8</th>
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</tr>
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<tr>
<td>8:00 a.m. - 6:00 p.m.</td>
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</tbody>
</table>

If you would like to meet with other conference attendees, use the mobile app to message and set up meetings – change privacy settings to public in your profile.

Wi-Fi Details
Complimentary internet access is available during the conference for all attendees. If you have questions, please stop by the Conference Information desks.

<table>
<thead>
<tr>
<th>Colorado Convention Center (Sunday – Wednesday)</th>
<th>Hyatt Meeting Space (Saturday – Sunday)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSID: SASEvents</td>
<td>SSID: SASEvents_Hyatt</td>
</tr>
</tbody>
</table>
The Den  NEW TO SAS GLOBAL FORUM 2018!
Street Level – Lobby D
Looking for a relaxed yet fun place to recharge? Head to the Den and take advantage of some engaging activities.

- LinkedIn Rock Your Profile*
- Update Your LinkedIn Photo*
- Social Media Tips*
- M&M Wall
- Games and Prizes

Monday, April 9 7:30 a.m. – 7:00 p.m.
Tuesday, April 10 7:30 a.m. – 6:30 p.m.
Wednesday, April 11 7:30 a.m. – 1:00 p.m.

*Hours may vary.

Social Media
- Twitter  @SASsoftware; #SASGF
- Facebook  Facebook.com/SASUsersgroup
- LinkedIn  SAS Users Group
- Instagram  Instagram.com/sassoftware
- Blog  blogs.sas.com

Security
Colorado Convention Center
All emergency calls should be sent to Colorado Convention Center security at 8-8030 from any house phone so that the situation can be handled quickly and effectively in accordance with the property’s established plan. If you are using a personal phone, the emergency number is 303-228-8030.

Hyatt Regency Denver
All emergency calls should be sent to Hyatt Regency at 55 from any house phone so that the situation can be handled quickly and effectively in accordance with the property’s established plan. If you are using a personal phone, the emergency number is 303-436-1234.
Lower Level

- Four Seasons Ballroom
  - Users Program Breakfast (Wednesday Only)

Upper Level

- Exhibit Hall C
  - Users Program Meals
  - Charity Activity
- Exhibit Hall D
  - The Quad

- Mile High Ballroom
  - Users Program Table Talks & Theaters
QUAD

What's Inside

TECHNOLOGY
- Administration
- Analytics
- Business Intelligence
- Clients and Support
- Data Management
- Global Hosting and Professional Services
- Industry Solutions
- JMP®
- Programming
- SAS® Platform
- SAS Partner Program
- SAS IoT Solutions
- Solutions

SUPER DEMOS
1. Business Intelligence
2. Business Intelligence
3. Data Management
4. Programming
5. Programming
6. Solutions
7. Administration
8. Analytics
9. Analytics
10. Emerging Technologies
11. Partners

CATALYST CAFE
- Accessibility
- CodeSnaps Court
- Connected Universe
- Report Design Clinic
- SAS Storytellers
- Social Listening Mural
- Women’s Initiative Network

LEARN
- Code Doctors
- Curriculum Pathways*
- Lecture Hall
- SAS Certification
- SAS for Education
- SAS Product Resources
- SAS Training

ENGAGE
- Customer Profile Preferences
- Customer Survey
- Data for Good
- GatherIQ™
- SAS Cares
- SAS Support Communities
- SAS Users Group
- SASware Ballot®
- Service Showcase

BOOKS
- Books
- SAS Press

E-POSTERS
1–22

PARTNER SPONSORS
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- Deloitte
- Experis
- First Analytics
- Hootonworks
- HPE
- IBM
- IBM Global Financing
- Intel
- KPMG

ACADEMIC SPONSORS
- Bryant University
- Capella University
- Creighton University - Heider College of Business
- Duke University - Fuqua School of Business
- Kennesaw State University - Center for Statistics & Analytical Research
- Louisiana State University - Stephenson Department of Entrepreneurship and Information Systems
- NC State University
- Oklahoma State University - Spears School of Business
- Southern Methodist University
- Texas A&M - MS Analytics
- Texas A&M - Statistics Online Programs
- University of Alabama - Manderson Graduate School of Business
- University of Central Florida
- University of Cincinnati - Center for Business Analytics
- University of Connecticut - School of Business
- University of Kansas
- University of Maryland University College
- University of New Hampshire - Analytics & Data Science
- University of Oklahoma
- University of South Australia
- University of Technology Sydney
- Wake Forest University

SAS® GLOBAL FORUM 2018
SAVE the DATE
APRIL 28 - MAY 1 // DALLAS, TX