IGNITE Formatting and Sample Proposal

Title Page

- See Title Page Template for instructions

Body of the Proposal Document

- A summary with a minimum of 900 words to a maximum of 3,000 words (excluding references) that describes the session in enough detail so reviewers can evaluate it effectively.
- Please provide a brief overview of the focal topic and a short summary of each presentation. If there are fewer than seven presenters, submissions should include guiding questions for the facilitated audience discussion portion.
- Please provide a short biography for each panelist.
- All IGNITE sessions are 50 minutes long and proposals should describe the structure of the session and how the time will be spent.
- Should not be prepared for blind review.

SUBMISSION TYPE
IGNITE

TITLE
Excel Can Do That? Maximizing I/O Projects through Excel

SHORTENED TITLE
Maximizing I/O Projects through Excel

ABSTRACT
While increasingly sophisticated data analytic tools abound, Excel remains a ubiquitous and accessible tool for many. This IGNITE! Panel highlights innovative applications of Excel that have maximized the impact of I/O projects. Panelists will present real-world tools that apply advanced Excel functionality to a range of I/O topics such as workforce planning, selection, and employee engagement.

CITATION
Dzieweczynski, J. L. (Chair), Gundermann, C. N. (Co-Chair), Bordeaux, C., Curtin, P. J., Haller, W. N., Pillion, H., Tate, B. W., & Tyler, S. W. (2024). Excel can do that? Maximizing I/O projects through Excel [IGNITE]. Society for Industrial and Organizational Psychology Annual Conference, Chicago, IL, United States.

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Excel Can Do That? Maximizing I/O Projects through Excel

In a world where data analytics and big data continue to rule, organizations are increasingly seeking sophisticated and high-powered tools to manage, analyze, and report on these data. Recent estimates suggest world-wide revenue for data analytic tools and/or solutions will surpass $200 billion by the year 2020 (Press, 2017). This trend is understandable given the impact data can have on organizations and the world alike, from helping predict crime rates to improving public health in underdeveloped nations (Shaw, 2014). It is clear investments in data analytics and big data are here to stay. However, not every organization has the resources to support the use of sophisticated data analytic platforms, many of which require a substantial financial investment or advanced expertise (e.g., knowledge of programming language) in order to use the tool. With this session we aim to bring it back to basics to demonstrate innovative applications of one of the longest standing data tools: Excel.

Having been around for over three decades, Excel is a bedrock in the data and analytics realm (The Editors of Encyclopaedia Britannica, n.d.). While critics of Excel exist (e.g., Marr, 2016; Shumsky, 2016), there is little argument to its ubiquity. Since conception, Excel has dominated the business industry; the Microsoft Office Suite for Windows has over 90% of the market share for business productivity software (Wohlsen, 2012). As such, Excel is a standard software on many personal and work computers, making it a readily accessible and cost-effective option for nearly anyone, in any organization, in any industry. Excel has been prolific in psychological research (e.g., Scherbaum & Ferreter, 2009; Shanock, Baran, Gentry, Pattison, & Heggestad, 2010), and this session will demonstrate that the use of Excel for I/O projects can be anything but basic.

Excel's functionality goes well beyond basic statistics, graphs, and the seemingly endless rows of data. Excel has been a proven tool to conduct meta-analyses and other advanced statistics such as non-linear regressions, confirmatory factor analyses, and the Monte Carlo simulation technique (Brown, 2001; Lambert, Mytilinaios, Maitland, & Brown, 2012; Miles, 2005; Neyeloff, Fuchs, & Moreira, 2012). Furthermore, Excel can be used to create innovative visualizations and interactive formats such as pivot charts and graphs tied to slicers that automatically filter and update with the click of a mouse. Excel's data visualization capabilities also include conditional formatting techniques and incorporation of shortcut buttons that produce sleek dashboards to effectively present complex data to stakeholders. More advanced capabilities include macros, known as virtual basic for applications (VBA), that allow for customization and automation of functions, drastically improving efficiency in data cleaning and analysis. Ladies and gentlemen, this is not your parents' Excel spreadsheet.

Because Excel is a familiar tool for a range of audiences – from data analysts to top leadership – it continues to be an accessible and impactful tool for I/O projects that involve data visualization. Indeed, a wide range of I/O projects involve manipulating and visualizing data to make it more accessible, clear, and engaging to key stakeholders (Sinar, 2018). Many populations are labeled as 'visual learners' (Clarke , Flaherty, & Yankey, 2006), and Excel provides a tool that allows internal and external clients to engage with and understand key metrics and data outputs in a familiar software environment. Likewise, innovative applications of Excel may also offer a seamless means of knowledge sharing and communication (Al-Kassab, Ouertani, Schiuma, & Neely, 2014). Given Excel's prevalence, these tools can be easily disseminated to employees and key stakeholders, providing access to the right information, at the right time, to make key organizational decisions. It is clear that Excel-based tools can be an

excellent option for a number of I/O projects due to its familiarity, low cost, and advanced and innovative capabilities.

Proposed Session

Our goal for this session is to illuminate possibilities and encourage others to maximize their I/O projects in innovative, cost-efficient, and compelling ways by using Excel-based tools. To reach this goal, we hope to:

1. Demonstrate the applicability and value of Excel across a wide range of I/O project areas – from workforce planning to selection to employee engagement.
2. Share lesser known tips and tricks for using Excel to its maximum potential (e.g., advanced formulas, macros).
3. Describe how Excel has helped to maximize the reach and impact of a range of I/O projects.

This 50-minute session will be broken down as follows:

- A brief **five-minute** introduction will be given by the chair to introduce the purpose of the session and the presenters.
- A total of **30 minutes** will be held for presentations. Each of the six presenters will provide a fast-paced five-minute overview of an Excel-based tool they developed to maximize the reach and impact of their I/O project. Each presenter will have a total of 15 slides, auto-advancing on a 20-second interval per slide. In their five minute presentation, presenters will 1) summarize the purpose of the tool, 2) provide a short demonstration of the tool, highlighting why and/or how it is innovative (e.g., visualizations, interactive dashboards, use of macros, etc.), 3) summarize any successes/impacts that have been

achieved as a result of the tool, and 4) share a favorite "quick tip" or trick for using Excel. Summaries of each presentation and tool are provided below.

- The final **15 minutes** will be reserved for discussion. During this time, the session will open to allow an audience question and answer period. If the audience does not have questions, planned discussion questions will be used to stimulate discussion between panelists and audience members (see below for sample discussion questions).

Presentation Summary

1. The *Career Experience Inventory (CEI) Dashboard* is an interactive Excel-based tool that uses macros to present visualizations of candidate data from the CEI, one component of U.S. Customs and Border Protection's competency-based assessments for promotion into supervisory/managerial law enforcement positions. The CEI measures the quantity and quality of candidates' job-related experiences for promotion. The CEI Dashboard uses vacancy-specific selection certificates generated in USA Staffing, a staffing software solution used by the Federal government, to provide selecting officials with a comparison of each candidate's job-related experiences with the aggregate of other candidates on a given selection certificate. Selecting officials may optionally use the resulting report as one piece of information considered when making a selection decision. A second version of the CEI Dashboard is also available to employees for developmental purposes. This version allows employees to compare their own job-related experiences to those of the broader pool of employees against whom they are most likely to compete for promotion. (Chris Bordeaux, U.S. Customs and Border Protection)

2. The *Federal Employee Viewpoint Survey (FEVS) Tool* provides different views of survey results broken out by organizational levels. The Excel tool also contains trend information relayed through heat charts and conditionally formatted content. The main advantage of using Excel in this way is that results are captured in one place rather than across several files in potentially different formats. A second unique advantage of the tool is a custom navigation ribbon with links to each sheet in the workbook. This custom ribbon reduces visual clutter and supports users to quickly navigate to desired content. Another key feature is the use of several slicers which allow users to sort results by year, organizational group, and item or index. This provides a customizable view of survey results that is similar to what is accomplished by popular data visualization applications. Data within the Excel tool are easily extracted for a myriad of uses, including a driver of employee engagement strategic planning, and are housed on an internal SharePoint site accessible by all employees. (Pat Curtin, National Science Foundation)
3. The *Position Management Tool* harnesses every position detail (e.g., position ID, office, series, plan) into three relational views. One view allows leadership to take inventory of the current status of offices, sub-offices, and teams by applying pivot table slicers to narrow position data via workforce metrics (e.g., plan, full performance level) and office. Another view allows leadership to view encumbered and vacant position totals by office. The final view provides organization charts using concatenated fields to provide key position details for every position in the chart. VBA buttons allow users to export the chart (PDF) to facilitate strategic workforce planning and summarize the current and future-state organizational structure. The tool has allowed the organization to pursue the next steps of strategic workforce planning, including mapping the future state of the

organization, and has experienced a 70% improvement in the time required to execute organizational and position changes. Supervisors and organizational leadership are now actively involved with position management, improving communication and awareness about essential topics. (Will Haller, FMP Consulting)

4. The *Employee Engagement Modeling Tool* is an interactive tool that shows the impact employee engagement can have on business outcomes. The tool was developed by using basic formulas, named ranges, data validation (i.e., dropdowns), and a VBA macro. The tool pulls together 20+ business outcomes (e.g., performance metrics, HR metrics, financial metrics) and an employee engagement score to show how offices measured up. The tool quickly summarizes a large amount of data into an interactive visual to allow stakeholders to understand the relationship between employee engagement and business outcomes, helping to educate managers about the importance of employee engagement. Senior leaders who have reviewed this tool quickly understand the message and buy-in to the importance of employee engagement. (Hanna Pillion, U.S. Customs and Border Protection)
5. The *Certification Program Metrics Tracker* tracks, combines, and visually depicts important metrics related to high-stakes qualification programs to ensure individuals meet competency standards for mission critical work roles. Communicating both the value of these programs as well as important trends to organizational leadership is important but challenging due to leadership's varying levels of familiarity with testing concepts, personnel programs, and the target population. The tool helps to address this challenge by tracking several certification metrics over time - including enrollment, pass-rates, renewals, and demographics - which has allowed organizational leadership to easily

identify and understand historical trends, near-term issues, and future directions for the program. (Brian Tate, General Dynamics Information Technology)

6. The *Workload Modeling Tool* is a customizable tool that allows users to identify optimal staffing levels by forecasting future workload, linking this to staffing ratios through a least squares multiple regression. The tool is capable of analyzing and forecasting workload at various organizational levels (e.g., individual position, department, or entire organization) by assessing the unique time requirements of each task/duty and the independent variables within a particular position. This allows users to select the correct level of granularity for each situation. The workload model utilizes an Excel add-in known as the Solver Function which incorporates a series of "what-if" analyses to minimize the error in prediction for a multiple regression equation. The Solver Function cycles through hundreds of thousands of scenarios by altering the regression coefficients of each independent variable (i.e., regression coefficient of each task duty) to most accurately map workload onto staffing levels. Further, various scenario-based functionalities were incorporated into the tool to make it capable of accounting for hypothetical situations such as policy or process changes that would influence future workload. The workload model is an empirically-based tool for predicting future staffing requirements and informing decisions based on workforce needs. This tool brings data, structure, and standardization to a process that has traditionally been based on anecdotes and intuition, and has drastically improved staffing efficiency and accuracy. (Stephen Tyler, FMP Consulting)

Discussion Questions

If needed, the following discussion questions will be used to stimulate conversation between the audience and panel members during the open Q&A period:

- When developing Excel-based tools for I/O projects, how do you ensure the longevity of the tool?
- How can sensitive data in Excel-based tools be protected at the same level as other tools?
- What is the typical developmental timeline (e.g., Scrum Sprints) for an Excel-based tool?
- What type of opposition or challenges have you faced when developing or implementing Excel-based tools? How did you overcome this?

Presenters

Short biographies for each of the presenters are provided below.

Chris Bordeaux is a Personnel Research Psychologist at U.S. Customs and Border Protection (CBP). In this role, he develops selection assessments for front-line law enforcement personnel, performs competency modeling and skills-gap analysis for various occupations, and leads several contract management activities for CBP's promotional testing programs. Chris received his M.A. in Industrial/Organizational Psychology from the University of Tulsa, and has been a practicing I/O Psychologist for 14 years.

Dr. Pat Curtin has over 20 years' experience working in the federal space as a Personnel Psychologist, with the last 10 years working for the Department of Homeland Security and the National Science Foundation. Dr. Curtin's work as a Personnel Psychologist has involved the development and validation of selection tools, development and delivery of training content, creation of workforce metrics, administration, analysis, and reporting for the Federal Employee

Viewpoint Survey (FEVS), and providing strategic workforce planning services. He received his Ph.D. in Industrial/Organizational Psychology from the University of Houston.

Will Haller is an Analyst at FMP Consulting and has over four years' experience applying I/O psychology principles to support human capital initiatives in the public and private sectors. Will's focus includes competency modeling, onboarding, learning and development, business process improvement and employee engagement. Will completed his M.S. in Industrial/Organizational Psychology from the University of Baltimore and obtained a certificate in Work, Organizational, and Personnel Psychology from the University of Valencia. His technical background includes survey development, test development, subject-matter expert (SME) interviewing, competency modeling, job analysis, Excel, and SPSS.

Hanna Pillion is a Personnel Research Psychologist in the Personnel Research and Assessment Development division of U.S. Customs and Border Protection (CBP). In her current role, Ms. Pillion manages the promotional testing assessments for CBP Officers, creates and analyzes custom organizational assessment surveys, and develops career ladders for various positions across CBP. Ms. Pillion currently uses Excel Pivot tables to expedite survey analysis. She received a M.S. in Industrial/Organizational Psychology from the University of Baltimore.

Dr. Brian Tate is a Research Scientist at General Dynamics Information Technology (GDIT). He specializes in working with members of the U.S. Department of Defense on initiatives related to certification and qualification programs, training design and evaluation, job analysis, test and survey design, career field management, and workforce management. Before joining GDIT, Dr. Tate worked with PDRI and U.S. Army Research Institute for the Behavioral and Social Sciences, where he performed research on the U.S. Army's screening programs for enlisted soldiers. He received a Ph.D. in Industrial/Organizational Psychology from the

Pennsylvania State University and has published papers on leadership, training and development, and personnel assessment and evaluation.

Stephen Tyler is a Consultant at FMP Consulting with several years of experience in the field of I/O psychology. He received his M.A. in Industrial/Organizational Psychology with a focus in statistics and quantitative methods from George Mason University. Stephen has authored a chapter on resilience in the workplace as well as articles for various I-O newsletters. He has also presented statistical benchmarking findings for a number of projects at conferences across the United States. In addition, Stephen has consulted with federal and state agencies to improve organizational and employee effectiveness within the areas of workforce planning, workload modeling, compensation review and restructuring, personnel classification, and organization assessment. Stephen is passionate about leveraging data and analytics to inform decision-making throughout organizations and has been involved with the development of forecasting and predictive tools by utilizing a number of statistical software packages including Excel.

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