**2022 Year End Promotion Optimization Team Performance Review for Michael Johnson.**

**General comments**

Michael’s stellar contributions on application of deep learning methods to optimal promotions planning (Next Best Engagement) while he was working as an intern in 2020 made us realize the huge value he could bring to Merck. I am glad that he accepted the offer from promotions optimization / commercial investments optimization team and joined the team in January of 2022. Because of resource needs and constraints within the team, he was thrown directly into one of the high impact and high visibility area of the promotion optimization team – managing Keytruda consumer promotions practice area with several hundreds of millions of dollars in promotions investments each year. In general, these roles are taken after many years of relevant experience. In this new role, Michael managed, developed appropriate analysis methods, developed various statistical and operations research models, guided multiple teams on relevant analysis and more importantly consulted with and managed the Oncology consumer, brand and media team leaders’ expectations and communications – no easy task particularly when one is new to the field.

Michael performed as well as it could be in the new and big responsibility area and with limited experiences he had coming in. As a manager, I acknowledge how difficult it could have been to take such big responsibilities and highly appreciate all the work that Michael accomplished.

Michael is highly knowledgeable in causal inference space and is always willing to learn anything new to him – including business issues and the nature of consumer promotions. Michael brought in several recent academic research and outcomes in causal inference and integrated some of the key innovations in this area into promotion optimization area. Such methodology infusions are highly appreciated by the team. Michael is very happy and enthusiastic to teach others and develop others in the team. Michael showed the team that there are multiple areas to evolve methodologically. I have come to learn a lot from him personally and the team would love to continue this learning path with him (when he has time). There is so much to improve as a team and Michael could be an important catalyst to guide the process.

Some of the developmental areas I could see for Michael are (a) get more comfortable with uncertainty in data and business issues and (b) tailor short and sweet key takeaways according to the needs of the audience. I am very confident that as Michael gets more experience, these areas will naturally develop.

**Key 2021 projects and initiatives**

* **Supporting Business Use Case for Keytruda TV**

Michael helped to make the business case for investing on TV ads for Keytruda by modelling, collating, and triangulating several analyses. This is a high investment (~$100MM yearly investment) and high visibility (Oncology Consumer leaders, Senior Leadership and CEO Rob Davis) initiative and Michael managed the analysis and Oncology consumer leadership quite effectively and represented business value of TV ads very well. Michael was also instrumental in evaluating alternate TV data sources to enhance the analysis and enable more granular TV planning in forthcoming years. His evaluations have initiated a new 2023 formal project to get deeper into one of the vendor’s data (VideoAmp).

* **Marketing Mix, Consumer promotion impact assessments and Budget Planning**

Michael guided ZS consultants to build Keytruda Consumer Marketing Mix models. This intense work stream went beyond guiding ZS consultants. Michael developed and validated marketing mix models independent of ZS and more importantly applied art to triangulate various consumer promotion impact workstreams by managing several vendors (ZS, Crossix), Oncology consumer teams, Merck Media team and internal stakeholders such as Datazymes and Merck Promotion Optimization team members. This important work informed ~$200MM investments and involved evaluating ~30 consumer channels and media vendors.

Michael extended the above work to apply operations research techniques to determine optimal consumer channel budgets, investments and resource allocations that would maximize impactable revenue under various business constraints. These are highly valuable work for Keytruda consumer team as it directly impacts several hundreds of millions of dollars in revenue and savings.

* **Strategic Initiatives**

Lung Precision Marketing and Arcadia Text Messaging campaigns were among some on the important strategic initiative by Oncology consumer team to evaluate effectiveness of such precision targeting and consumer reach out strategies. Michael played a major role in evaluating these programs in terms of business impacts. The challenges here were enormous in terms of identifying relevant data for analysis, dealing with noisy and partial datasets, and also developing innovative methods to measure their sales impacts. Michael implemented innovative causal impact methods (Synthetic controls) for Lung Precision Marketing measurements and guided future investments. Arcadia program had data challenges and Michael evaluated and guided the team on possible best approaches given the data limitations.

* **Innovations**

Michaels’ strong knowledge and extensive experience in causal inference methods has led to development of key innovative methods for Global Human Health organization. Supporting Health Map initiative is one such example. Health Map is an important initiative to use consumer data to measure multiple consumer channels internally within Merck (currently Merck depends on external vendors such as Crossix). Michael created the framework and codes to optimally match treated and control patients by implementing novel cutting edge techniques such as BigMatch, appropriate distance metrics and risk set matching techniques. These paves the way for better matching techniques using large datasets and more importantly assess the consumer promotions in more objective and statistically appropriate academically researched ways. These techniques will be looked at in more depth when Health Map initiative develops further.

**Stakeholder feedbacks**

Michael took point on several key Keytruda deliverables. He is open minded, always willing to learn, self-aware of limitations, pulls in leadership when needed and is nice and easy to work with. Michael brings in growth mindset by coming up with different and new approaches to traditional analysis. Michael is highly collaborative and works well with other teams.

Some of the areas for continual development would be to reduce details in some of the communications, get to the point on key takeaways and tailor the messages succinctly to corresponding audiences. Another area, that is more relevant to commercial space, is to get comfortable with lack of data and information particularly when there are lot of variables in play. The stakeholder is confident that through more experiences in coming years, these characteristics will naturally develop.

**Closing Remarks:**

I am happy to have had Michael as the promotion optimization team member. I am also supportive of his interest in choosing to join the MRL team within Merck to expand and explore his areas of interest. I am confident that his high level of curiosity and deep knowledge in his research area will make him to be valuable and productive in his new endeavors. I am also looking forward to learning more on methodologies and research areas from Michael that could be extended to commercial side of the business.