EXHIBIT D

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

IN RE: MCKINSEY & CO., INC. NATIONAL PRESCRIPTION OPIATE CONSULTANT LITIGATION *This Document Relates to:* *ALL THIRD-PARTY PAYOR ACTIONS*	Case No. 21-md-02996-CRB (SK)

SECOND EXPERT REPORT OF PROFESSOR MEREDITH ROSENTHAL

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I. EXECUTIVE SUMMARY

1. I have been asked by counsel to the Third-Party Payor (TPP) plaintiffs in this matter to propose a method of allocation for the Settlement proceeds. I understand that the Settlement with McKinsey & Company, Inc. (hereafter, "McKinsey") is intended to compensate TPPs for overcharges related to the alleged involvement of McKinsey in the false marketing of opioids. In this report, I describe an allocation method that relies on data reasonably available to TPPs and reflects the relative impact of false marketing of opioids on TPP plaintiffs. In particular, the proposed allocation takes as its point of departure either: (1) the total dollar value of opioid claims and medical treatment for enrollees with opioid use disorder (OUD), or (2) the number of enrollees or beneficiaries covered by the TPP, with adjustments to reflect the disproportionate targeting of physicians in specific states by the marketing efforts of opioid manufacturers.

2. Based on similar allocation approaches in other opioid matters and adapting methods developed in the academic literature, I propose and demonstrate the use of an allocation method that is feasible given data constraints faced by class members, that relies on methods used by economists to estimate the impact of opioid marketing, and that ensures that TPPs that were impacted more by the alleged misconduct receive a larger share of the Settlement. In addition to proposing two alternate approaches to calculating allocation shares for TPPs with and without claims data, respectively, I have also described how these methods could be applied for plaintiffs that cover only prescription drugs or medical care, but not both.

3. I reserve the right to update my analyses and conclusions if additional information becomes available.

II. QUALIFICATIONS

4. My name is Meredith B. Rosenthal. I am the C. Boyden Gray Professor of Health Economics and Policy at the Harvard T.H. Chan School of Public Health and an Academic Affiliate of Greylock McKinnon Associates ("GMA"), a consulting and litigation support firm. My principal research interests concern the economics of the health care industry, including pharmaceuticals.

5. At Harvard, I have taught undergraduate-, Masters-, and Ph.D.-level health economics and health policy courses. I have conducted research on a wide variety of health economics topics, with a focus on the financing and organization of the U.S. health care system. Specific topics I have studied include the effect of payment incentives on provider behavior,[1] payment and delivery system reform,[2] and advertising of prescription drugs.[3] I have published more than 170 peer-reviewed journal articles, essays, and book chapters.

6. Since 1996, I have worked through GMA as an expert in health economics on litigation in health care markets and the pharmaceutical industry. I have submitted written and oral testimony in litigation regarding allegations of foreclosure of generic entry, improper marketing, fraudulent use of list prices, anticompetitive contracting, and violations of the false claims act.[4]

7. I received an A.B. in International Relations from Brown University in 1990 and a Ph.D. in Health Policy (Economics Track) from Harvard University in 1998. A more complete description of my qualifications is found in my *Curriculum Vitae*, which is included as Attachment A to this report. Attachment A also includes a list of my testimony in the past four years and a list of my publications. Attachment B is a listing of the materials I relied upon in forming the opinions included in this report. GMA is currently compensated at a rate of $950 per hour for my time. I may also receive additional compensation from GMA based on staff billings in this matter. Neither my nor GMA's compensation in this matter is contingent upon the

[1] M. Rosenthal, "Risk Sharing and the Supply of Mental Health Services," *Journal of Health Economics*, 19(6), November 2000, pp. 1047-65. M. Rosenthal, R. Frank, Z. Li, and A. Epstein, "From Concept to Practice: Early Experience with Pay-for-Performance," *Journal of the American Medical Association*, 294(14), October 2005, pp. 1788-93. M. Rosenthal, Z. Li, A. Robertson, and A. Milstein, "Impact of Financial Incentives for Prenatal Care on Birth Outcomes and Spending," *Health Services Research*, 44(5), Part 1, October 2009, pp. 1465-79.

[2] M. Rosenthal, "Beyond Pay for Performance – Emerging Models of Provider-Payment Reform," *New England Journal of Medicine*, 359(12), September 2008, pp. 1197-1200. M. Rosenthal, M. Friedberg, S. Singer, D. Eastman, Z. Li, and E. Schneider, "Effect of a Multipayer Patient-Centered Medical Home on Health Care Utilization and Quality: The Rhode Island Chronic Care Sustainability Initiative Pilot Program," *JAMA Internal Medicine*, September 2013, pp. 1907-13. S. Edwards, M. Abrams, M. Rosenthal, *et al.*, "Structuring Payment to Medical Homes After the Affordable Care Act," *Journal of General Internal Medicine*, 2014, pp. 1410-13.

[3] M. Rosenthal, *et al.*, "Promotion of Prescription Drugs to Consumers," *The New England Journal of Medicine*, 346(7), February 2002, pp. 498-505. M. Rosenthal, *et al*., "Demand Effects of Recent Changes in Prescription Drug Promotion," *Forum for Health Economics & Policy*, 6(1), January 2003, pp. 1-26. M. Mello, M. Rosenthal, and P. Neumann, "Direct-to-Consumer Advertising and Shared Liability for Pharmaceutical Manufacturers," *Journal of the American Medical Association*, 289(4), January 2003, pp. 477-81. J. Donohue, E. Berndt, M. Rosenthal, A. Epstein, and R. Frank, "Effects of Pharmaceutical Promotion on Adherence to the Treatment Guidelines for Depression," *Medical Care*, 42(12), December 2004, pp. 1176-85.

[4] See Attachment A for a listing of my most recent testimony.

outcome of this litigation. Should additional materials become available after the submission of this report and if asked to do so by counsel or the Court, I reserve the right to update my analysis.

III. INTRODUCTION

8. A national class-action suit was brought on behalf of TPPs alleging that McKinsey contributed to harms caused by opioid manufacturers through their consulting business. McKinsey is alleged to have assisted opioid manufacturers in their efforts to distort the benefits of opioid treatments and downplay their risks, leading to overuse of opioids and the opioid epidemic that continues to this day. TPPs were (and continue to be) affected by the alleged misconduct as they pay for pharmaceuticals for their enrollees, including opioids and other prescription drugs, and medical care, including treatments for opioid use disorder and its complications.

9. The TPP Class for which this Settlement is designated, is defined as follows[5]:

> All entities that paid and/or reimbursed for (a) opioid prescription drugs manufactured, marketed, sold, or distributed by the Opioid Marketing Enterprise Members (Purdue, Johnson & Johnson, Janssen, Cephalon, Endo, and Mallinckrodt), for purposes other than resale, and/or (b) paid or incurred costs for treatment related to the misuse, addiction, and/or overdose of opioid drugs, on behalf of individual beneficiaries, insureds, and/or members, during the period June 1, 2009 to October 31, 2023. For clarity, included in the class are: (a) private contractors of Federal Health Employee Benefits plans, (b) plans for self-insured local governmental entities that have not settled claims in MDL 2804, (c) managed Medicaid plans, (d) plans operating under Medicare Part C and/or D, and (e) Taft Hartley plans.
>
> Excluded from the class are (a) all federal and state governmental entities, (b) all tribal entities, (c) local governmental entities and school districts, (d) Pharmacy Benefit Managers (PBMs), (e) consumers, and (f) fully-insured plans. For the avoidance of doubt, entities that are otherwise members of the class are not excluded on the basis that they own an interest, including a controlling interest, in a PBM.

10. In the remainder of this report, I describe my approach to allocation, which builds on methods first used in peer-reviewed studies in economics and health policy.

[5] Settlement Agreement Among Third Party Payors and McKinsey Defendants, *IN RE: McKinsey & CO., INC. National Prescription Opiate Consultant Litigation*, United States District Court, Northern District of California, (Case No. 21-md-02996-CRB (SK), December 18 2023, (hereafter, "Settlement").

IV. PROPOSED METHOD OF ALLOCATION

11. Conceptually, a fixed settlement to compensate TPPs for overcharges related to opioid marketing should be allocated in a way that reflects the relative burden borne by individual TPPs. This relative burden can be approximated by comparison of TPPs' estimated spending on opioids and the health care sequelae of opioid addiction (e.g., emergency department visits for overdose). In the following two sections, I describe two alternative methods for estimating opioid-related spending: (1) for those TPPs with claims data (i.e., electronic records of individual claims payment transactions for opioid-related services), and (2) for those TPPs without claims data.

A. Claims-based Approach

12. The first method of estimating opioid-related spending uses class member claims data for the damage period. These data can be tabulated to construct the two component estimates of opioid-related spending: (1) spending on prescription opioids, including medications for opioid use disorder and (2) the excess health care spending for people with OUD covered by the plan.

13. For the first part of the calculation, TPPs will begin by identifying the relevant claims for opioids based on drug names or National Drug Classification numbers (NDCs). TPP paid amounts (the amounts paid to pharmacies by the TPP after the consumer share has been netted out of the total transaction price) will be summed over all relevant claims.

14. For the second part of the calculation, TPPs will count the number of enrollee-years (e.g., if there are 10 people per year with OUD in each of 5 years, that would be 50 OUD enrollee-years) with OUD during the class period and multiply this number by a published estimate of the excess cost of OUD. Patients with OUD should be identified by the presence of a diagnosis code on any medical claim associated with OUD in the year of interest. That is, TPPs should count the unique number of members with any OUD diagnosis in each year and sum these for the number of enrollee-years with OUD.

15. The excess cost of OUD is estimated by researchers by identifying populations as similar as possible except for the presence of a diagnosis of OUD and comparing their annual spending. In particular, Davenport, et al. published a report through the Society of Actuaries in 2019 that

estimated the medical cost of OUD (excluding prescription drugs, which are separately tabulated as described above) to be approximately $19,118 for patients with OUD in 2015 and 2016.[6] Because this estimate is averaged over two years that lie roughly in the middle of the damage period (2009 to 2023), we can use it without adjustment to approximate the average cost per person with OUD over the entire period, assuming that costs have similar patterns of increases over time before and after 2015-16 (and thus, the overcount of costs pre-2015 is offset by a symmetric undercount after 2016). Excess spending on enrollees with OUD will therefore be estimated as the number of enrollee-years with OUD multiplied by $19,118.

16. TPPs prescription opioid expenditures and OUD expenditures will then be summed up and reported at the state level.

B. Enrollment-based Approach

17. Some TPP class members may not have access to claims data, however. An alternative approach to allocation would instead focus on the size of the affected population, measured in the number of enrollees, and account for differential exposure to the challenged conduct. In my experience conducting academic research involving TPP data, enrollment data can often be found in reports and regulatory filings, even if electronic data are not available. Thus, an alternative method of estimating opioid-related spending for TPPs without claims data could use these enrollment data as the point of departure. My proposed alternative approach to estimating opioid-related spending from enrollment data is predicated on the fact that the impact of opioid manufacturers' marketing on TPPs is a function of: (1) the size of their covered populations over the class period (i.e., enrollment) and (2) their exposure to the harms caused by the challenged marketing. Following recent work exploring the impact of opioid marketing on downstream outcomes, I measure exposure as a function of the geographic location of enrollees given that opioid manufacturers disproportionately targeted physicians in certain states over others.

[6] S.Davenport, et al, "Economic Impact of Non-Medical Opioid Use in the United States," Society of Actuaries, October 2019, (https://www.soa.org/globalassets/assets/files/resources/research-report/2019/econ-impact-non-medical-opioid-use.pdf). Figure 8 details additional total spending of $21,281 per patient with OUD when compared to non-OUD control patient, and net average prescription drug cost of $2,163, additional spending total of patients diagnosed with OUD is $19,118 ($21,281 - $2,163 = $19,118).

Geographic Targeting of Opioid Marketing

18. I develop the enrollment-based approach by adapting a methodology used by Dennett and Gonsalves (2023), which in turn built on two earlier economics papers. Dennett and Gonsalves examine the impact of opioid marketing on long-term health outcomes associated with opioid use and addiction.[7] They combine insights from two previous papers (described below) that developed proxies for exposure to opioid marketing and showed that early targeting of states with certain characteristics caused differences in long-term opioid impacts including increased opioid-related health care utilization and spending. The proxies these authors use derive from internal information on Purdue's marketing strategies made public during litigation. First, researchers found that a state's use of triplicate prescription programs, a strict set of prescription drug monitoring policies, was a deterrent to opioid marketing because physicians in states with triplicate prescribing were less likely to use opioids.[8] Second, other researchers found that cancer mortality was a predictor of opioid marketing because these drugs were initially indicated for cancer-related pain.[9] Dennett and Gonsalves combine both proxies to categorize states as low, middle, and high-exposure to opioid marketing. In their primary analysis and a series of robustness checks, they demonstrate that these categories are strong predictors of the long-term consequences of opioid marketing and independent of their dependent variables. Notably, in supplemental analyses Dennett and Gonsalves demonstrate that their exposure variables are associated with trends in opioid shipments (wholesale quantities).[10] I replicated this analysis using Drug Enforcement Agency data in Figure 1 below. Figure 1 charts the average milligrams of morphine equivalents (MMEs) per capita for states categorized as low, medium, and high exposure, respectively. As expected, there is a clear difference in the levels of MMEs across the three exposure groups.

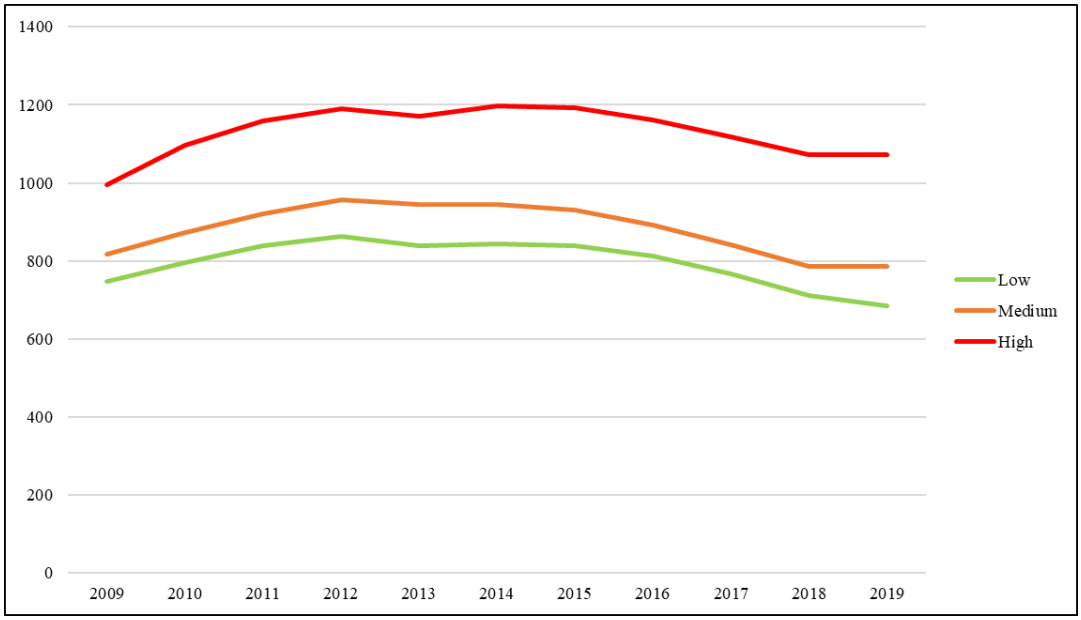
[7] J.M. Dennett and G.S. Gonsalves. "Early OxyContin Marketing Linked to Long-Term Spread of Infectious Diseases Associated with Injection Drug Use," *Health Affairs*, 42(8), 2023, pp. 1081-90.

[8] A. Alpert, W.N. Evans, E.M.J. Lieber, and D. Powell, "Origins of The Opioid Crisis and Its Enduring Impacts," *Quarterly Journal of Economics*, 2022, 137(2), pp.1139–79.

[9] C. Arteaga and V. Barone, "A Manufactured Tragedy: The Origins and Deep Ripples of The Opioid Epidemic," working paper, October 10, 2023, (https://viquibarone.github.io/baronevictoria/Opioids_ArteagaBarone.pdf).

[10] Dennett and Gonsalves, *op. cit*., Supplemental Appendix, Figure S2.

Figure 1: Mean MMEs per Capita, by State Exposure Level



19. Based on the insights from this research, I propose the following approach to estimating opioid-related spending for TPPs that cannot access their own claims data. First, the claims administrator will request that TPPs with claims data report their prescription drug spending and enrollee-years with OUD by state as discussed in section IV.A above. These TPPs will also be required to report their current enrollment by state, based on electronic data that are available for claims adjudication.[11] Second, after calculating total opioid-related spending for each TPP using the claims approach, the claims administrator will calculate an average dollar amount of opioid-related spending per enrollee per year, separately for enrollees in low, middle and high exposure states to reflect the differing impact of the misconduct in these areas. The average opioid-related spending per enrollee per year (for each subgroup of states) for TPPs using the enrollment approach is to be estimated as follows: total estimated opioid-related spending TPPs in the claims-based approach for 2009-2023, divided by the product of fifteen (the number of years that those spending figures reflect) and the sum of reported current enrollment for TPPs that are also reporting claims-based information.

[11] While current enrollment must be available to TPPs to adjudicate claims, these data are continuously updated as members enroll, disenroll, and change plans. Because not all TPPs save annual snapshots of this continuously changing eligibility record, I propose that the claim form request only a current enrollment snapshot, by state.

20. Estimated spending on opioid-related expenses for TPPs that are only able to report enrollment will then be calculated as: the sum of (1) the number of enrollees in low-exposure states multiplied by the average opioid-related spending per enrollee per year in low-exposure states, (2) the number of enrollees in middle-exposure states multiplied by the average opioid-related spending per enrollee in middle-exposure states, and (3) the number of enrollees in high-exposure states multiplied by the average opioid-related spending per enrollee in high-exposure states.

21. To illustrate, imagine the following hypothetical. First, the claims administrator calculates total opioid-related spending and current enrollment for class members that are able to tabulate their claims based on the approach described above. These hypothetical amounts are shown in the first two rows of Table 1 below. The claims administrator then uses the enrollment by state data from these same class members (those that reported claims-based estimates of opioids and enrollee-years with OUD) to calculate the average dollar value of claims per enrollee per year (dividing total claims by 15 – the number of years in the damage period – and the reported total enrollment) in low, middle, and high exposure states. These (hypothetical) amounts are shown in the last row of Table 1.

Table 1. Hypothetical Calculations of Opioid-related Spending per Enrollee-year for TPPs Without Claims Data

	Low exposure	**Middle exposure**	**High exposure**
Total Opioid-related Spending for TPPs with Claims Data from 2009 - 2023	$100,000,000	$200,000,000	$800,000,000
Current Enrollment for TPPs With Claims Data	50,000	40,000	100,000
Opioid-Related Spending Per Enrollee-Year	$133.33	$ 333.33	$533.33

22. The dollar amounts used for allocation for members without claims data can then be calculated by multiplying the number of enrollee-years for each exposure category by the respective dollar value of claims per enrollee per year for the exposure category. These amounts would be summed for each TPP.

C. Calculating Shares for TPPs that Cover Only Prescription Drugs or Only Medical Care

23. Some TPP class members were only financially responsible for either prescription drug spending or medical care, but not both, during the damage period. The claims-based methodology proposed above is readily adaptable to TPPs that only covered one of prescription drugs or medical care because there are separate calculations proposed for each, which are then combined to estimate total opioid-related spending. For TPPs with enrollment data only, the claims administrator can separately compute opioid-related prescription drug or OUD-associated medical spending per enrollee by state and apply these component measures to the reported enrollment data.

D. Conclusion

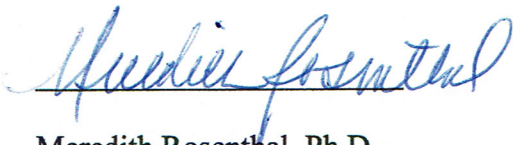
24. For each class member that files a valid claim form, their share of the Settlement will be calculated as the sum of their total prescription opioid spending and total excess spending for enrollees with OUD estimated using one of the two methods described above, divided by the total estimated opioid-related spending for all class members that make a valid settlement claim (or have one made on their behalf). Table 2 below provides a hypothetical example if only three TPPs submitted valid claims to the Settlement. Each TPP's share of the settlement is their total opioid spending divided by the total opioid spending for all TPPs that submitted claims (here, $440 million in total).

Table 2. Hypothetical Share of Total Settlement for All TPPs

	TPP 1	TPP 2	TPP 3
Total Prescription Opioid Spending	$50,000,000	$30,000,000	$60,000,000
Total Excess Spending on OUD	$100,000,000	$80,000,000	$120,000,000
Total Opioid-related Spending	$150,000,000	$110,000,000	$180,000,000
Share of settlement	34%	25%	41%

25. In my opinion, the allocation approach I propose above is economically reasonable because it either directly reflects the dollar amount of opioid-related spending borne by each class member or indirectly captures this impact based on evidence that the alleged marketing scheme was geographically targeted.

26. Based on my expertise in health economics, experience working with industry data, and knowledge of this matter, I conclude that this two-part method offers a feasible and fair approach to settlement allocation in this matter.



Meredith Rosenthal, Ph.D.
March 22, 2024