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ISSUE BRIEF

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Use of Participant Compensation in U.S. Clinical Research Studies

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KEY POINTS

- Providing compensation to clinical research participants to offset the costs associated with participation is often suggested as a way to improve recruitment and retention. However, relatively little is known about the landscape of compensation in clinical research.
- This study implemented a text mining approach to identify compensation across 7,648 U.S.-based clinical research studies, using informed consent files available in ClinicalTrials.gov. Studies in the sample had registered start dates between 1994-2025, with 88.4% starting in 2015 or later.
- Overall, the text mining approach identified 4,548 studies (59.5%) as offering compensation to participants.
- The percentage of studies offering compensation varied between intervention types (10.2%-84.2%), trial phases (34.8%-63.3%), and health conditions being studied (22%-90.6%).
- These results highlight the need for additional research into the use of compensation in clinical research studies, particularly in the context of its effectiveness to improve patient recruitment and retention.

BACKGROUND

Financial impacts of participating in clinical research[i] – out-of-pocket medical expenses, travel expenses, lost wages, and other factors – are often thought to reduce participation. A growing body of literature has suggested that compensating research participants for their time[ii] may be one way to offset these costs and improve or incentivize recruitment and retention,[1,2] balanced with ethical considerations to avoid creating undue influence or coercion.[3] However, relatively little is known about how compensation is currently used in clinical research, particularly when broken down by factors such as trial phase or therapeutic area.

In general, existing literature on compensation has examined small subsets of studies, often focusing on a small number of research sites or types. Looking across these studies, it is clear that the use of compensation varies greatly and may depend on factors such as research type (i.e., biomedical versus behavioral), study setting, and risk or burden to participants. For example, two publications focused on research studies at a single institution found 55% (55/100) of sociobehavioral trials and 74% (23/31) of biomedical trials offered

[i] The term clinical research includes both interventional and observational studies. Where the term "clinical trial" or "trial" is used, this refers to interventional studies consistent with the definition provided by 45 CFR 46.102(b).

[ii] For the purposes of this issue brief, the term "compensation" refers to monetary payments received for completing some or all parts of a clinical research study. Compensation is separate from any reimbursement participants may receive for actual expenses incurred (e.g., travel expenses).

compensation.[4,5] Another study of published clinical trials found only 5.4% (11/203) offered compensation[6], and a study of emergency department-based trials found that 9.2% (7/76) offered payments to participants.[7] A recent ASPE survey of cancer clinical trial participants found that 26.8% (30/112) received compensation.[8] These studies highlight significant variability in the use of compensation across clinical research, which might be partially explained by the conditions or interventions being studied.[9] However, all of these studies evaluated a small number of trials in specific settings, and as a result, it is difficult to generate any generalizable conclusions from the literature.

Despite the potential for compensation to increase research participation, there remains a fundamental gap in our understanding of how widely compensation is currently used in clinical research. This foundational work is a first step toward identifying where changing compensation norms may have the greatest impact on participant recruitment and retention. This issue brief presents an analysis of compensation use across 7,648 clinical research studies conducted in the U.S., broken down by trial phase, intervention type, and health condition.

METHODS

ClinicalTrials.gov is an online database of clinical research studies containing sponsor- or investigator-provided information about clinical research studies.[10] The database was launched in 2000 in response to a requirement of the Food and Drug Administration Modernization Act of 1997. In the U.S., certain types of clinical research studies are required to be submitted to ClinicalTrials.gov; those not covered by law or policy may be submitted on a voluntary basis.[11] In 2018, the Revised Common Rule – the Federal Policy for the Protection of Human Subjects – included new requirements for certain types of clinical trials to make informed consent files publicly available.[12] This requirement may be met through submission to ClinicalTrials.gov.[13]

This study used a convenience sample of clinical research studies with informed consent files available on ClinicalTrials.gov. As of December 5, 2024, there were 7,653 clinical research studies in the U.S. that included informed consent document(s) on ClinicalTrials.gov. The metadata from these trials were manually downloaded on December 5, 2024. Five of the studies in the sample were expanded access[iii] trials; these were excluded from further analysis. The informed consent file(s) for the remaining 7,648 studies were then downloaded using the unique URLs contained in the metadata. This resulted in a total of 7,981 informed consent files corresponding to the 7,648 identified studies.[iv] Studies in the sample had start dates between 1994 and 2025, with 88.4% starting in 2015 or later (Figure 1). Approximately 68% of the studies in the sample were completed.

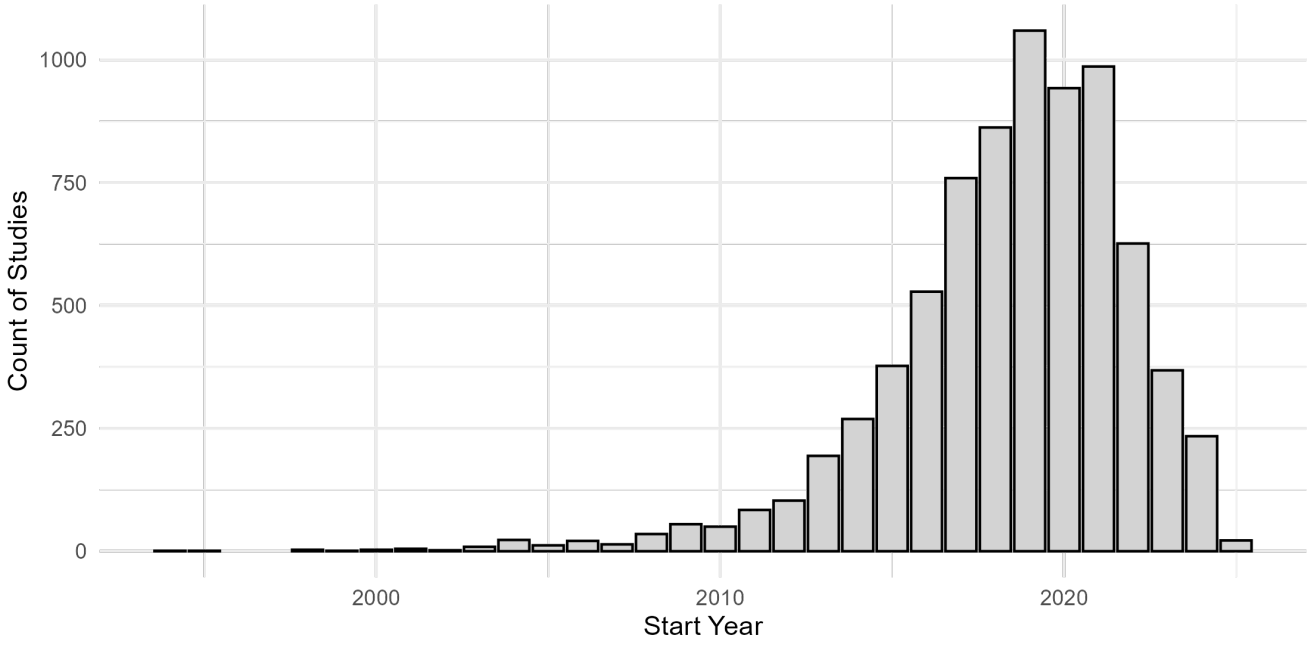
Figure 2 shows a flow chart outlining the analytical approach. Pdf-handling and text mining capabilities were implemented using R version 4.4.1 and the R packages *pdftools* version 3.4.0 and *pdfsearch* version 0.3.0 to search for keywords relating to compensation in the informed consent files for each study. When relevant keywords were found, the surrounding text was searched for the dollar symbol ("$"). Studies that included compensation-related keywords and a specific dollar amount in the same section of the informed consent file were classified as offering compensation. This two-step approach was intended to separate those offering compensation from those that contained information about a lack of compensation – for example, many informed consent documents contain a statement such as: "You will not be paid for this study." When

[iii] Sometimes called "compassionate use", expanded access is a potential pathway for a patient with a serious or immediately life-threatening disease or condition to gain access to an investigational medical product (drug, biologic, or medical device) for treatment outside of clinical trials when no comparable or satisfactory alternative therapy options are available. For more information, see: https://www.fda.gov/news-events/public-health-focus/expanded-access.

[iv] Studies may have multiple informed consent files for various reasons, such as the enrollment of different types of participants in the same study (i.e., clinicians, adult patients, pediatric patients), or to reflect updates to the study protocol.

compensation is included in the trial, information about the payment, including amount, should be included in the informed consent document.[3] This approach was also intended to capture only monetary payments with a concrete dollar amount and do not generally capture other forms of incentives (such as receiving a device for free) or reimbursements. This process was repeated for all informed consent files available for each study. A study was considered to offer compensation if compensation was identified in any of its informed consent files.

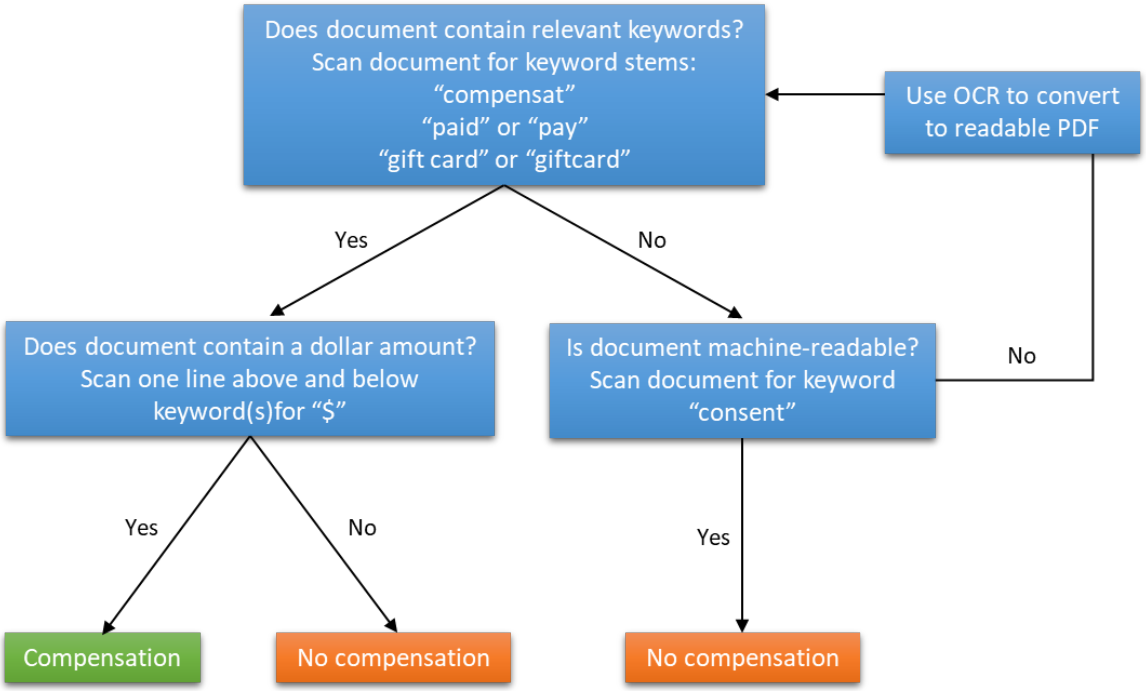
Figure 1. Distribution of Research Study Start Years in Sample



Many of the informed consent files included in this study were scanned documents and not machine-readable. These were identified by searching for a word that all of the documents in the study sample should contain – "consent". If the code was unable to detect the word "consent", the files were then provided to an optical character recognition (OCR) engine using the R package *tesseract* version 5.2.1. After the files were read using OCR, the previous steps were repeated to identify informed consent files that documented compensation. A total of 677 files were reviewed through OCR.

The accuracy of this approach was manually validated on a random sample of 100 informed consent files. These represented 60 files drawn randomly from the entire study sample, and 40 selected randomly from the pool of non-machine-readable pdfs. This was intended to validate the OCR approach and ensure that there was not an accuracy bias between these two approaches. Overall, the code correctly categorized 95 out of the 100 documents. For the five documents incorrectly categorized, three were incorrectly classified as having compensation due to inclusion of the target keywords and specific dollar amounts when referring to other monetary-related issues (financial disclosures, travel reimbursements, and out-of-pocket costs). One file was partially machine-readable, and so was not flagged as requiring OCR, but was not fully processed. The last of the misclassified files did not contain the keywords near the dollar amount. This accuracy rate is reasonable given the limitations of the approach and does not suggest any systematic bias that would alter the results.

Figure 2. Flow chart for identifying studies with compensation



Analysis by Study Characteristics

Study characteristics were taken from ClinicalTrials.gov metadata, focusing on the following variables in the metadata file: "Start date", "Intervention", and "Phases".[14] Intervention type was determined by extracting all of the intervention types provided in the "Intervention" field. Phases and intervention types use categories defined by ClinicalTrials.gov.[15]

Additionally, the "Conditions" data field from the ClinicalTrials.gov metadata was used to classify studies into health condition categories using an automated data mining tool developed by the World Health Organization (WHO).[16] The "Conditions" data field in ClinicalTrials.gov does not use a standard terminology hierarchy. The WHO mapping tool takes these text fields and maps them to three hierarchical levels of health categories, including the WHO International Classification of Diseases (ICD-11), the Global Burden of Disease, and the Unified Medical Language Thesaurus. Within the tool, Level 1 provides a very high-level category (e.g., "Non-communicable diseases"), Level 2 narrows the focus to a category of conditions (e.g., "Neuropsychiatric disorders"), and Level 3 provides more narrow categories, but might still encompass multiple conditions (e.g., "Parkinson's disease", "Pain disorders"). This analysis focused on the Level 2 and Level 3 health categories. Not all studies included a disease state in the ClinicalTrials.gov metadata, and some were too general to be mapped to a health condition (e.g., "Well-being"). However, the mapping tool successfully mapped 5,879 studies (76.9%) to health categories.

RESULTS

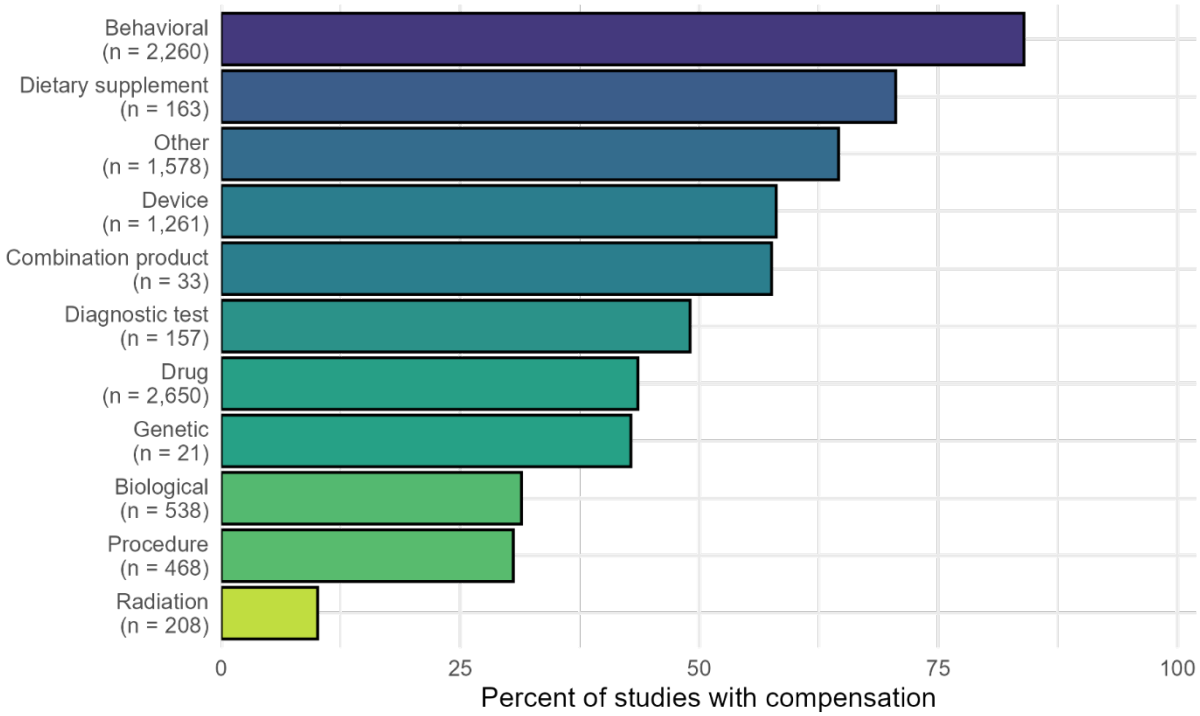
Overall, the text mining approach classified 4,548 studies (59.5%) as offering compensation (Table 1). The proportion of studies offering compensation generally increased over time.

Table 1. Compensation by Study Start Year

	Number of Studies in Group	Number (%) with Compensation
Overall	7,648	4,548 (59.5%)
Study Start Year		
Pre-2010	185	41 (22.2%)
2010-2014	700	292 (41.7%)
2015-2017	1,664	922 (55.4%)
2018-2020	2,863	1,770 (61.8%)
2021-Present	2,236	1,523 (68.1%)

Figure 3 shows the percentage of studies offering compensation by intervention type. Intervention types are not mutually exclusive, as a study could select all types that were applicable. A much higher percentage of studies with a behavioral intervention offered compensation (84.0%) relative to those with device (58.0%) or drug (43.5%) interventions. Although radiation studies made up a small fraction of the sample (n = 208), they were also the least likely to offer compensation (10.1%).

Figure 3. Percentage of studies offering compensation by intervention type

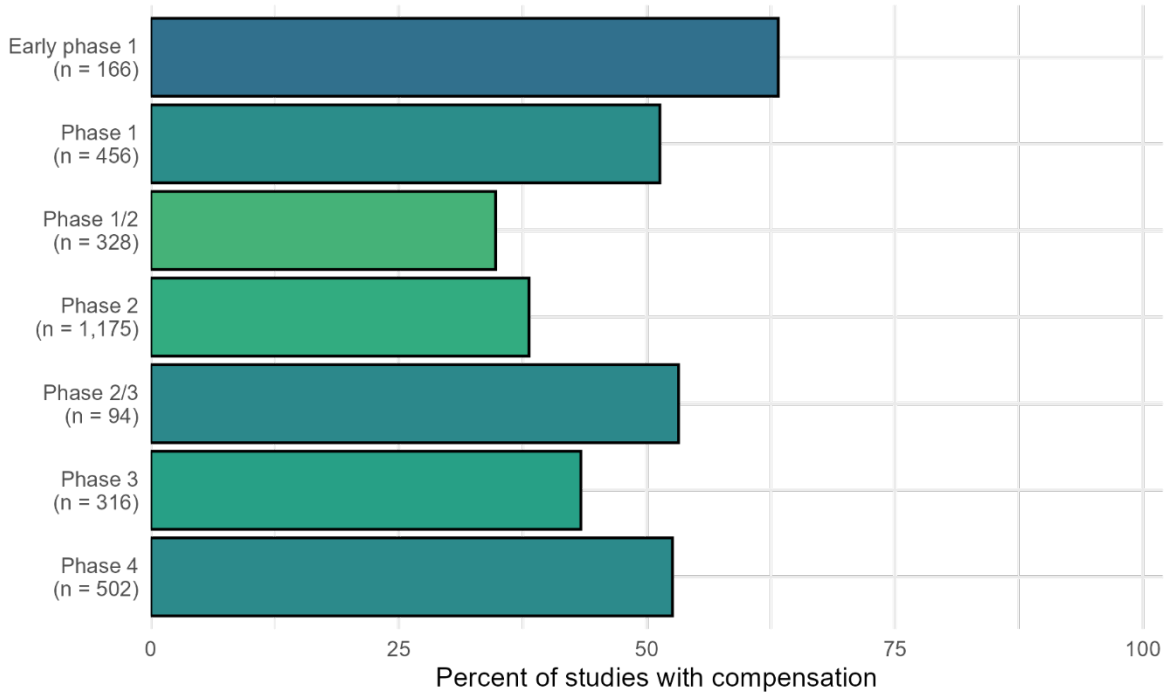


Note: The total number of studies in each intervention category (from which the percentages were calculated) is shown on the y-axis. Categories are not mutually exclusive and some studies are counted under multiple intervention types. Intervention types are as defined by ClinicalTrials.gov.[15] This figure excludes 231 studies with no intervention category provided.

Figure 4 shows the percentage of studies offering compensation by phase. Early Phase 1 trials – exploratory trials conducted before traditional phase 1 trials to investigate how or whether a drug affects the body[14] –

were the most likely to offer compensation. Studies in phases 2 or 3 were slightly less likely to offer compensation.

Figure 4. Percentage of studies offering compensation by trial phase

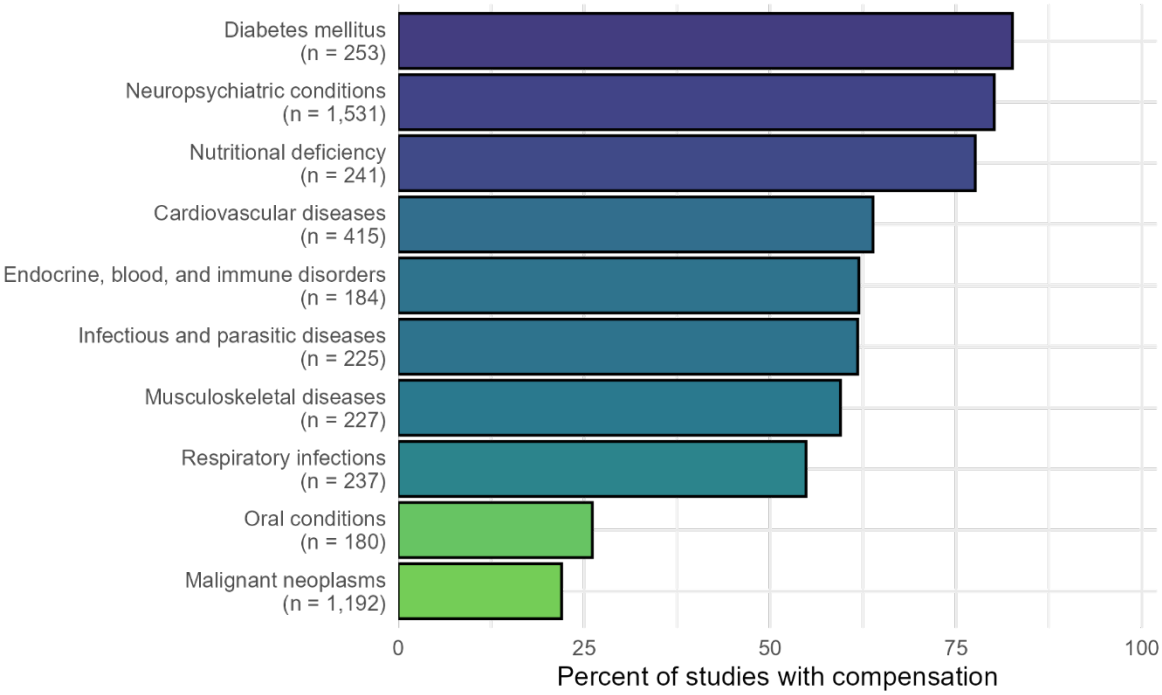


Note: A total of 3,037 studies included phase information. These consist primarily of studies for drug or biological products.

Approximately 76.9% of the studies could be mapped to health categories using the WHO data mining tool (see Methods). The percentage of studies offering compensation varied dramatically between health categories (Appendix Table 1; Figure 5). Among the ten most common health categories in the sample, the percentage of trials offering compensation ranged from over 80% for diabetes and neuropsychiatric studies to less than 25% of cancer (malignant neoplasm) studies (Figure 5).

Variability within health categories was also considerable. Table 2 shows the breakdown of the ten most common specific health conditions ("Level 3" in the WHO mapping tool) for neuropsychiatric conditions and malignant neoplasms, the two categories with the largest number of studies in the sample. Studies for diseases such as Parkinson's and Alzheimer's offered compensation less frequently than alcohol or drug use disorders. However, all of the neuropsychiatric subcategories offered compensation more frequently than cancer trials – which ranged from 40.8% of breast cancer studies to 4.2% of leukemia studies.

Figure 5. Percentage of studies offering compensation by health condition category



Note: Figure shows the ten most common health condition categories within the sample. Categories are taken directly from level two of the WHO standard classification of health categories, as implemented in their automated data mining tool.[16]

Table 2. Number and percentage of studies offering compensation by specific health condition

	Number of Studies in Group	Number (%) with Compensation
Neuropsychiatric Conditions		
Alcohol use disorders	106	100 (94.3%)
Drug use disorders	159	149 (93.7%)
Disorders due to use of nicotine	129	117 (90.7%)
Post-traumatic stress disorder	98	87 (88.8%)
Pain disorders	64	52 (81.2%)
Unipolar depressive disorders	185	146 (78.9%)
Anxiety or fear-related disorders	77	58 (75.3%)
Neurodevelopmental disorders	85	64 (75.3%)
Alzheimer's disease and other dementias	91	68 (74.7%)
Parkinson's disease	58	38 (65.5%)
Malignant neoplasms		
Breast cancer	179	73 (40.8%)
Colon and rectum cancers	75	28 (37.3%)
Malignant neoplasms of ill-defined or unspecified primary sites	53	19 (35.8%)
Trachea, bronchus and lung cancer	109	39 (35.8%)
Malignant adenomas and adenocarcinomas	59	12 (20.3%)

Prostate cancer	127	25 (19.7%)
Pancreas cancer	32	4 (12.5%)
Brain or central nervous system neoplasms	83	9 (10.8%)
Lymphomas, multiple myeloma	108	8 (7.4%)
Leukemia	120	5 (4.2%)

Note: Table shows the ten most common health condition subcategories within the larger neuropsychiatric conditions and malignant neoplasms categories. Categories and subcategories are taken directly from levels two and three of the WHO standard classification of health categories, as implemented in their automated data mining tool.[16]

DISCUSSION

This issue brief provides a broad overview of the prevalence of compensation in U.S. clinical research studies, broken down by specific trial characteristics. Although compensation is often discussed in the context of increasing recruitment and retention by reducing financial barriers for clinical research participation, relatively little is known about the current state of compensation in clinical research. Existing analyses of compensation in clinical research are generally focused on small samples of specific trial or disease types. This issue brief builds on existing literature by applying a single approach for identifying compensation to a wide range of clinical research studies, regardless of sponsoring institution, study phase, or therapeutic area.

This analysis demonstrates that while compensation is relatively common across the clinical research enterprise, its application varies dramatically by intervention type, study phase, and health condition category. Compensation was most common in behavioral studies and less common for drug or device studies. Differences were more modest between study phases, although early phase 1 trials offered compensation the most frequently. Although not all studies could be assigned to a health condition category, the analysis also showed that the disease being treated likely influences the offering of compensation, both at an aggregated category level (Figure 5) and broken down by specific health conditions (Table 2).

The findings presented in this issue brief are generally consistent with the published literature, which show highly variable rates of compensation by a variety of study types and therapeutic areas. However, this is the first study to allow direct comparison of compensation by study characteristics. This demonstrates that the potential impact of increasing the use of compensation in clinical research will not be uniform. Some intervention types and therapeutic areas may experience greater gains in participant recruitment and retention if compensation is more widely adopted, although this evaluation did not examine whether recruitment goals were met in studies offering compensation or whether compensation resulted in greater study retention.

This study did not explore the amount of compensation provided, which may affect the degree to which it impacts recruitment and retention. Existing estimates have shown significant variability, based on the benefits and risks of the study, study duration, phase, setting, disease type, and other factors.[4,5,17,18] Variation in the cost of running the study – which is mediated by factors such as study design, therapeutic area, number of participants, and phase[19] – may also influence the sponsor's likelihood of offering compensation. Furthermore, recent research has demonstrated that the amount of compensation may influence participation gaps by factors such as socioeconomic status and race, demonstrating the importance of appropriately scaled incentives to engage underrepresented populations in research.[20] The study approach outlined here was unable to generate quantitative estimates of compensation due to the extremely variable nature of this content in the informed consent files. Trials may offer compensation as a single lump sum or in increments after certain milestones are completed. These are rarely documented in similar ways in the trial

documentation, making a standard extraction approach challenging. Future work using more sophisticated language processing techniques may be able to build on the current approach to explore this question further. Understanding the amounts of compensation offered by clinical research studies is particularly important in the context of other policy issues, such as the implications of payments being considered taxable income, which has been suggested as a disincentive to certain participants.[21,22]

The results presented in this study are subject to limitations. Although the text mining approach implemented was manually validated and found to have a high accuracy rate, it likely classified some studies incorrectly. Studies that used less direct language (e.g., "receive") around compensation or payment may not have been captured using the keywords. Analysis by study characteristics such as intervention type or health condition is limited by the quality of data entered by the sponsor into ClinicalTrials.gov. Furthermore, because the sample was limited to studies that included informed consent files on ClinicalTrials.gov, this sample should not be considered representative of all clinical research. The Revised Common Rule (2018) requires nonexempt clinical trials (as defined by 45 CFR 46.102(b)) conducted or supported by the U.S. Department of Health and Human Services (HHS) to submit informed consent forms after the trial is closed to recruitment or within 60 days of the last study visit by any subject,[12] and the Office for Human Research Protections (OHRP) published guidance implementing this rule in 2022.[13] This requirement is likely why the sample skews toward more recent trials. However, there are many recent studies that do not have informed consent files available on ClinicalTrials.gov. Some may have provided informed consent files via an alternative posting option on Regulations.gov, but because they cannot be easily linked to study metadata, they could not be readily integrated into the pipeline for this study. Ultimately, this is a potential source of bias, as this rule only applies to a subset of all clinical research. However, at over 7,000 clinical research studies, this issue brief provides a large body of evidence regarding the inclusion of compensation in U.S. clinical trials.

CONCLUSIONS

This issue brief implemented a novel approach to identify clinical trials that offered compensation to their participants. While over half of clinical research studies in the sample offered at least some form of compensation, there was significant variation in the use of compensation by intervention type, study phase, and health conditions being studied. These results highlight the need for additional research to further understand the landscape of clinical research compensation.

APPENDIX

Table A1. Percentage of studies offering compensation by health condition category

	Number of Studies in Category	Number (%) with Compensation
Intentional injuries	64	58 (90.6%)
Diabetes mellitus	253	209 (82.6%)
Unintentional injuries	31	25 (80.6%)
Neuropsychiatric conditions	1,531	1,227 (80.1%)
Nutritional deficiency	241	187 (77.6%)
Skin diseases	69	45 (65.2%)
Sense organ diseases	138	89 (64.5%)
Cardiovascular diseases	415	265 (63.9%)
Endocrine, blood, and immune disorders	184	114 (62%)
Infectious and parasitic diseases	225	139 (61.8%)
Respiratory diseases	142	85 (59.9%)
Musculoskeletal diseases	227	135 (59.5%)
Genitourinary diseases	168	97 (57.7%)
Congenital anomalies	54	31 (57.4%)
Ill-defined injuries/accidents	164	93 (56.7%)
Respiratory infections	237	130 (54.9%)
Digestive diseases	133	69 (51.9%)
Maternal conditions	58	30 (51.7%)
Conditions related to sexual health	6	3 (50%)
Health related- medical broad	70	33 (47.1%)
Other neoplasms	50	22 (44%)
Perinatal conditions	42	18 (42.9%)
Oral conditions	180	47 (26.1%)
Malignant neoplasms	1192	262 (22%)

Note: Categories are taken directly from level two of the WHO standard classification of health categories, as implemented in their automated data mining tool.[16] This table shows all studies that were mapped to a health category (76.9% of the full study sample).

REFERENCES

1. Schwartz AL, Alsan M, Morris A, Halpern SD. Why Diverse Clinical Trial Participation Matters. *New England Journal of Medicine*. 2023;368(14):1252-1254.
2. National Academies of Sciences, Engineering, and Medicine. Improving Representation in Clinical Trials and Research: Building Research Equity for Women and Underrepresented Groups. The National Academies Press; 2022. doi:10.17226/26479
3. Food and Drug Administration. Payment and Reimbursement to Research Subjects: Guidance for Institutional Review Boards and Clinical Investigators. 2018. https://www.fda.gov/regulatory-information/search-fda-guidance-documents/payment-and-reimbursement-research-subjects
4. Brown B, Marg L, Zhang Z, Kuzmanovic D, Dube K, Galea J. Factors Associated With Payments to Research Participants: A Review of Sociobehavioral Studies at a Large Southern California Research University. *J Empir Res Hum Res Ethics*. Oct 2019;14(4):408-415. doi:10.1177/1556264619869538
5. Brown B, Marg L, Michels E, et al. Comparing Payments Between Sociobehavioral and Biomedical Studies in a Large Research University in Southern California. *J Empir Res Hum Res Ethics*. Feb-Apr 2021;16(1-2):117-124. doi:10.1177/1556264620987773
6. Moore JX, Anderson LN, Li C, et al. Toward equitable payment for inclusive participation. *J Clin Transl Sci*. 2023;7(1):e58. doi:10.1017/cts.2023.5
7. Bernstein SL, Feldman J. Incentives to participate in clinical trials: practical and ethical considerations. *Am J Emerg Med*. Sep 2015;33(9):1197-200. doi:10.1016/j.ajem.2015.05.020
8. Kolbe A, Beleche T. Financial stress associated with oncology clinical trial participation. 2025. https://aspe.hhs.gov/reports/financial-stress-clinical-trial
9. Wolf LE, Kench S, Ledford CJW. A taxing problem: The impacts of research payment practices on participants and inclusive research. *PLoS One*. 2024;19(6):e0303112. doi:10.1371/journal.pone.0303112
10. National Library of Medicine. About ClinicalTrials.gov. 2024. https://clinicaltrials.gov/about-site/about-ctg
11. National Library of Medicine. Clinical Trial Reporting Requirements. 2024. https://clinicaltrials.gov/policy/reporting-requirements
12. 45 CFR 46.116(h).
13. Informed Consent Posting Instructions (2022): General Instructions on the Informed Consent Posting Requirement (45 CFR 46.116(h)) (2022).
14. National Library of Medicine. ClinicalTrials.gov Glossary Terms. https://clinicaltrials.gov/study-basics/glossary
15. National Library of Medicine. Protocol registration data element definitions for interventional and observational studies. 2024. https://clinicaltrials.gov/policy/protocol-definitions
16. Ralaidovy AH, Adam T. Automated data mining tool for the standard classification of health categories. Global Observatory on Health R&D, World Health Organization; 2022. https://www.who.int/observatories/global-observatory-on-health-research-and-development/classifications/health-categories
17. Grady C, Dickert N, Jawetz T, Gensler G, Emanuel E. An analysis of U.S. practices of paying research participants. *Contemp Clin Trials*. Jun 2005;26(3):365-75. doi:10.1016/j.cct.2005.02.003
18. Fisher JA, McManus L, Kalbaugh JM, Walker RL. Phase I trial compensation: How much do healthy volunteers actually earn from clinical trial enrollment? *Clin Trials*. Aug 2021;18(4):477-487. doi:10.1177/17407745211011069
19. Eastern Research Group. Drug Development. 2024. https://aspe.hhs.gov/reports/drug-development
20. Dutz D, Greenstone M, Hortacsu A, et al. Representation and Hesitancy in Population Health Research: Evidence from a COVID-19 Antibody Study. *Becker Friedman Institute for Economics Working Paper*. 2022;2022-161
21. Murphy J, Lacasse L. The importance of reducing the financial burden of participating in clinical trials. *STAT News*. 2024. https://www.statnews.com/2024/08/27/clinical-trials-payments-congress-taxes/
22. Rand LZ, Kesselheim AS. Payments for research participation: Don't tax the Guinea pig. *Clin Trials*. Oct 2022;19(5):579-583. doi:10.1177/17407745221105896

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