International Academic Institute for Science and Technology

International Academic Journal of Organizational Behavior and Human Resource Management
Vol. 13, No. 3, 2026, pp. 1-11.

ISSN 2454-2210

International Academic Journal of Organizational Behavior and Human Resource Management

www.iaiest.com

Ethical Implications of Genetic and Biometric Data Use in Employment Decisions

Budi Santoso [a*], Siti Rahmawati [b]

[a*] *Indonesian Institute for Digital Development Research, Bandung, Indonesia.*
[b] *Indonesian Institute for Digital Development Research, Bandung, Indonesia.*

Abstract

Decisions related to employment have always involved inferring future performance from available evidence, but the type of information being used for inference is evolving. Genetic testing is supposed to provide information on susceptibility to disease as well as interaction between genes and environment; biometrics translates fingerprints, face structure, voice patterns, and body movement into claims of identity. Such information differs in fundamental ways from the traditional personnel information available to the employer: it is immutable, intimately connected to identity, often shared with family members without their consent, and predictive in nature rather than merely descriptive. The objective of this paper is to analyze the ethical dimensions of using such data in hiring, promotion, accommodation, and firing decisions. The legal regime dealing with genetic and biometric data is described in this paper, and it is shown to be fractured, inadequate, and based on consent impossible to obtain within an employment relationship. It goes on to formulate an ethics analysis from the perspective of autonomy, privacy, dignity, distributive justice, and proportionality, stating that the two principles which can stand up to analysis – the protection of the health of workers and the protection of third parties from harm – limit the legitimate scope of genetic/biometric screening much more than the practice currently allows. To facilitate empirical studies in the field, the article formulates a research design and a full-fledged SPSS analysis protocol, detailing the variables to be used, the hypotheses to be tested, the statistical tests to be performed, and the output format; synthesizing the quantitative results already published.

Keywords: Genetic Data, Biometric Data, Employment Decisions, Workplace Privacy, Ethical Implications, Employment Discrimination, Data Protection.

DOI: 10.71086/IAJOBHRM/V13I3/IAJOBHRM1311
Received: 20 June 2026/Revised: 02 July 2026/Accepted: 12 August 2026/Published: 29 September 2026

Introduction

Information gathering regarding the worker has always been part and parcel of the employment relationship. The unique thing about today's situation is that the type of information employers now gather has increasingly less to do with what a person has done and more with what a person is. Although few businesses currently utilize genetic testing, or use genetic information, further developments in genetics will probably result in increased use of genetics in the workplace (Lemmens, 1997). Genetic testing for diseases and susceptibilities has greatly improved since the completion of the Human Genome Project, and further testing is expected in the future. One area in which this increased testing is anticipated to occur is the workplace, where employers will try to shield their employees from negative gene-environment interaction, raise productivity, and reduce rising health care costs. In addition, biometrics have been increasingly used in the workplace to control access and record time and attendance, and biometric data collection is often a condition of employment.

Development of digital technology has revolutionized the process of collecting and analyzing the information of employees through the use of workplace information system. Employment processes including recruitment, performance appraisal, promotion, and accommodation have always depended on visible traits such as educational background, professional experience, skills, and behavior. Nevertheless, the development of new technologies has made it possible for employers to obtain extremely confidential biological and physiological information. Genetic and biometric information has become very relevant since this type of information can give information about the current traits of an individual in addition to predicting future traits, behaviors, and abilities of individuals. There are various technologies that have come up, which include genetic testing, biometric authentication, face recognition, voice analysis, and behavioral recognition. These technologies offer an opportunity for enhanced security and occupational safety in addition to offering personalized care for employees. Nonetheless, this has also raised various ethical issues surrounding the information gathered.

The use of genetic information is inherently different from regular employment data since it carries predictions related to the biological nature, health risks, inherited diseases, and future health condition of an individual. Unlike other personal data, genetic information is unchangeable; once disclosed, it cannot be changed in any way. Moreover, the information can be related not only to one person but to his/her biological relatives who did not give their consent to the disclosure of such information. The application of genetic information in employment settings such as hiring, insurance, work-related risks, and even employee surveillance raises issues since such actions may lead to genetic discrimination whereby people are being treated unequally based on biological information.

These two categories of information provide for a similar approach to analysis because they possess a number of features which distinguish them from an ethical perspective. They are inflexible and hard, if not impossible, to modify; they are integral components of identity and not just an attribute of one's identity; they can be possessed by one's kinship, who did not give consent for any such action; and their importance stems from probability, not the reality, of events in the future. While regular tests aim at finding out what a job candidate can do, genetic and biometric tools aim at finding out what kind of person the candidate is and what may become of him/her.

In the same way, the adoption of biometric information within contemporary workplaces has been on the rise due to various activities such as identity verification, access control, attendance tracking, and staff authentication. Biometrics like fingerprint identification, face recognition, iris scanning, voice recognition, and gait analysis have a lot in common with individual identity and cannot be replaced easily when hacked (Holland & Tham, 2020). Although biometrics offer organizations increased security and decrease cases of identity theft, the constant collection and processing of biometric information could result in increased surveillance. The utilization of facial recognition technology for monitoring staff performance or detecting emotions among employees poses challenges of transparency, proportionality, and possible abuse of personal data. The adoption of biometric identification systems as a requirement for employment will affect individuals' autonomy.

There is no question that the consequences are tangible. Even though an increased risk of developing a condition later in life is a result of genetic testing, it does not have any bearing on one's current capability of working, but it can affect an employment or promotion decision without the candidate being able to trace it. Genetic test results cannot be replaced should they be compromised, and their release can lead to the potential victim suffering lasting harm. Genetic testing at the workplace has posed serious risks to individuals in the past, and recent developments indicate that such testing may become a very real threat to the privacy, autonomy, and dignity of workers (Brandt-Rauf & Brandt-Rauf, 2004).

The goals of this study include the following: firstly, identification of genetic and biometric data as employment-related data and explanation of how the characteristics of such data contradict the basic assumptions of the usual personnel data policy; secondly, description of the regulatory system that reveals separate, uneven and often incomplete legislative regulation of genetic and biometric information; thirdly, development of an ethical approach based on the ideas of autonomy, privacy, dignity, justice, and proportionality and the conclusion about how protection of health and non-harm to others are the only possible justification for conducting genetic screening in employment and this can be done in special cases only. Fourthly, formulation of the research design including SPSS analysis protocol and synthesis of available quantitative data in order to test the ethical claims.

The argument is that the ethical defensibility of the use of genetic and biometric data in employment decisions rests almost entirely upon the context in which the data use takes place rather than the data itself. Insofar as data collection can be shown to be necessary, proportional, transparent, negotiated by all parties concerned, and accountable, then it might be defensible within a restricted set of ends. However, when consent to collect data is provided under conditions of coercion due to dependency on employment, then it is both unethical and legally precarious.

Genetic and Biometric Data as Employment Information

The Distinctive Properties of Genetic Information

There are several ways in which genetic information is different from typical personal information that have implications both ethical and legal. The first way is in the nature of the information. While an employee's performance report states facts, genetic information states probabilities - it provides information on the susceptibility of an individual to a disease that may or may not occur and will depend on other factors including environment, behavior, and occupation. The second way is in its familial implication. Genetic information on one individual also serves as genetic information on his or her parents, brothers and sisters and offspring who were not part of the testing procedure or the decision-making process that led to its use. The third way is in the fact that it is non-modifiable, unlike other information that can be improved upon through time and effort.

These characteristics make it unethical issues of a structural nature, rather than accidental ones. The use of genetic information in selection cannot meet the criteria of job relatedness and business necessity set out by the anti-discrimination doctrine if this type of information cannot yet be established as the determinant of current work ability. At the moment there is no scientific proof to support the connection between the unexpressed genetic characteristics and the ability to fulfill some job function, and employers thus cannot claim that the use of genetic information meets the criteria of being "job-related and consistent with business necessity" – criteria that have often been used in anti-discrimination legislation.

Biometric Data and The Irreversibility Problem

Whereas biometrics share immutability characteristic with genetic information, their functionality is different in that it is used in authentication and classification rather than prediction. This distinction, however, has not spared biometric information from ethical problem. In the absence of federal regulations regarding the collection of biometric data by employers, it is possible to require employees to participate in biometric systems as a condition for employment, and, in addition to the impossibility of replacement of such information, biometric data is usually associated with personal and financial accounts, as well as with IT services performed by external providers, increasing the danger of information leakage, malfunctioning and inference. The point about third parties is crucial – involvement of a vendor into the collection process increases the number of interested parties which can abuse the template.

This translates to a situation where biometric enrollment becomes a conditional requirement rather than an option. Biometric data collection may be necessary for attendance, authentication, or security purposes and in most cases, is a condition of employment. An Australian case study where a decision to fire an individual based on his refusal to submit biometric data was reversed through the process of legislation shows both the need for collection of such information and the capriciousness of the legislative process protecting this information, while at the same time offering guidelines for the collection, storage, and management of biometric data. The fact that the decision was based on legislation rather than any principle of consent on the part of employees is itself evidence of an improvised framework rather than a structured one.

The use of biometrics may entail a great intrusion into the privacy of individuals and may violate the dignity of those involved, especially in situations where the purpose of the use of the technology is control in the workplace related to access to private information or zones. Special attention should be paid to facial recognition since it can be performed covertly, from a distance and without the consent of the individual, meaning that the notification model used for the

regulation of keystroke monitoring cannot be applied to it. Findings of cross-national studies are consistent with the above conclusion. For example, in Ecuador, biometric data increases efficiency and security but creates ethical and legal challenges since there is no effective mechanism of obtaining consent and a power imbalance that puts at risk the rights of an individual (Quimbita & Fabián Alfredo, 2025).

Why Employment Is the Hardest Context for Consent

A flaw inherent to consent in employment has long been noted in the relevant literature. The existence of an imbalance in terms of the distribution of bargaining powers within the workplace means that consent is problematic as the basis for policy. This is not a purely abstract objection to consent. Employees have been found more willing to undergo genetic tests when they were not forced to inform about the results of testing to their employer (Schwartz, 2012). Testing and disclosing information are different things, and the difference between the two shows that employees see informing the employer as a burden—the part that consent procedures should make legitimate but actually make formal.

The conclusion from this ethical position is rather clear. Consensual agreement on paper does not address the problem; it shifts it into the paperwork. That is why it is necessary to find other justifications for the collection and processing of genetic and biometric information in employment that will be independent from the consent of the workers involved in the process. Otherwise, the justification of such a practice becomes impossible.

The Regulatory Architecture

Genetic Information in The United States: Antecedents and the Gina Settlement

Layers can describe the evolution of the American approach to the issue of genetic discrimination. First of all, in 1995, the Equal Employment Opportunity Commission published guidance in its compliance manual, interpreting the definition of "disability" in terms of the existence of discrimination based on genetic information about illness, disease, or other disorders in the working place; according to the guidance, the Americans with Disabilities Act would provide protection against discrimination based on such kind of information (Rothenberg et al., 1997). At the same time, there were several issues which remained unresolved in the guidance – it was unclear whether the coverage would include people without diseases but with recessive or X-linked mutations, there were no complaints about genetic discrimination to the EEOC, and the guidance has not yet been tested in courts. Therefore, there is a lack of protection from the Americans with Disabilities Act.

The deficiency of protection was also exacerbated by the timing of the requirements concerning medical inquiries. While the ADA prohibits medical inquiries prior to employment, it does not prohibit the acquisition of medical information, including genetic information, after a conditional offer of employment, and it allows the employer to demand a preplacement medical examination which may include a physical examination and blood testing, including genetic testing, and a general release of medical information of the individual. Where there is a prohibition on discrimination based on disability or any other genetic information, it is also very difficult for the individual to establish that he/she did not obtain employment or a promotion because of such disability or any other genetic information.

The Health Insurance Portability and Accountability Act of 1996 partially solved the issue by making certain provisions in this respect on the side of the insurance industry. First of all, the law explicitly states that a group health insurance plan must not use any genetic information when establishing criteria for enrollment or continued enrollment and also that the genetic information is not considered a pre-existing condition in the absence of a diagnosis of the condition. However, the law does not provide any privacy provisions, and it is up to the employee to prove that their insurance was refused due to genetic information. In addition, the law does not forbid group health plans from raising premiums, covering nothing but a certain condition or placing lifetime limits on benefits as long as these features do not target a certain ill employee or his/her dependent.

GINA and other pieces of legislation have been put into place in order to outlaw discrimination based on genetics and health, but there are many limits to such legislation, and even some of it is in danger of being repealed. This is the key point of the modern ethical debate on GINA: it is a compromise rather than a solution, and its survival depends on political factors rather than scientific ones.

The Biometric Vacuum

Biometric regulation in the United States is yet more lacking. The most prominent state-level laws protecting the biometrics of employees, the Illinois Biometric Information Privacy Act and the California Consumer Privacy Act,

are inadequate for their purposes, prompting proposals for mandatory national regulations to make biometric data retention more transparent, inform employees about risks involved prior to enrolment, give them time to think and provide alternatives (Harmon, 2024). All four aspects of the proposal address different inadequacies of the current system: unknown retention period of the templates stored, enrolment prior to understanding the implications, immediate and inevitable enrolment and lack of an alternative way to obtain the same job without biometrics.

It is thus clear that the pattern in regulation of genetics and biometrics is similar: the protection is late, applies to the wrong entity and relies on individual exercise of the rights that individuals cannot exercise. Genetic information is protected from discrimination but not from acquisition after a conditional offer. Biometrics is protected by certain states, but not others, and rarely if ever in the context of employment.

European Instruments and Their Employment-Specific Logic

In the case of the European model, the issue is approached through the creation of special conditions for genetic and biometric data as special categories of personal data, and also through regulation of the systems processing such information. The EU Artificial Intelligence Act, after being published officially in the Official Journal on July 12, 2024, will become applicable after 6 to 36 months from that date, based on the risk-based approach that classifies AI systems in accordance with their risk to the health, safety, and fundamental rights and that introduces additional obligations for high-risk systems. The fields of employment, worker management, and self-employment are just a few of the fields in which the system will be considered high-risk.

There are two aspects of the Act which are relevant to decisions about biometric systems at work. First, biometric classification and emotion recognition are defined as being high-risk applications, and the use of emotional data in the workplace is forbidden explicitly. Second, according to Article 26(7), employers who are deployers must notify both worker representatives and all affected workers that they will be subjected to a high-risk AI system, by using the expression "all affected workers," and not "employees," in order to make the responsible party obligated to notify all those who are subjected to such systems (Yusifli, 2024). This is important in the case of biometric usage because it includes contractors, agency workers, and applicants, who are, in fact, the groups mostly exposed to biometric tests when accessing sites or recruitment sites.

There are real consequences attached to enforcement. The largest penalties, for breaches of the prohibitions against particular types of AI systems, can be up to €30 million or 6 percent of turnover, while for the majority of other obligations, the penalties can be as much as 4 percent of worldwide turnover or €20 million, whichever is greater. For an international employer, the equation becomes different: where biometric screening might trigger only a civil suit in the United States, it triggers administrative penalties based on worldwide turnover in Europe.

Ethical Analysis

Autonomy and the Limits of Consent

The first ethical pillar is autonomy, and its central instrument—consent—fails in this context for the reason already identified. Because unequal bargaining power in the workplace limits the validity of consent as a basis for policymaking, ethical analysis must proceed by identifying justifications that do not depend on worker agreement. This reframing is more consequential than it first appears. If consent cannot legitimize genetic testing, then the practice requires a substantive justification, and the justifications available are narrow.

Two specific justifications have been proposed for genetic testing in the workplace: the protection of health and the avoidance of harm to others. Each is limited in scope. Protection of health justifies testing only where an identifiable intervention would reduce a demonstrated risk, and only where the intervention cannot be delivered to the whole workforce by means of general protective measures. Avoidance of harm to others justifies testing only where an employee's condition creates a material risk to third parties, as might be argued in safety-critical transport or nuclear roles. Neither justification supports routine pre-employment genetic screening, and neither supports using genetic information for productivity or cost control, which were among the original employer motivations for workplace testing.

The literature accordingly recommends that genetic testing be permitted only in exceptional circumstances and that every genetic test be evaluated on its scientific validity and submitted to rigorous review. Existing anti-discrimination law is described as a useful model for examining the rationality and proportionality of genetic testing in the workplace—a formulation that imports the doctrinal tests of job relatedness and business necessity into the ethical assessment itself. This convergence between law and ethics is analytically valuable because it supplies an operational

test: a practice that cannot be validated is not proportionate, and a practice that is not proportionate is not ethical, irrespective of the consent obtained.

Privacy, Dignity, and the Integrity of the Person

The second ethical pillar concerns privacy and dignity. Genetic testing in the workplace raises concerns that it could pose a significant threat to workers' privacy, autonomy, and dignity, and defining the appropriate and inappropriate uses of such testing presents a major challenge for occupational health professionals. The conjunction of the three terms is deliberate and worth unpacking. Privacy is violated when information about a person circulates beyond the boundaries they can control. Autonomy is violated when decisions about a person's working life are made on the basis of attributes they cannot alter. Dignity is violated when a person is treated as a bundle of risk factors rather than as an agent whose choices matter.

Biometric systems raise the same triad in a different register. Biometric techniques can involve significant interference with privacy and threaten the dignity of those concerned, particularly when used for workplace controls over access to sensitive information or areas (Giedrewicz-Niewińska, 2025). The qualifier "particularly" identifies the aggravating feature: when biometric control is combined with physical or informational exclusion, the individual is not merely identified but is also demoted, and the demotion is executed by a system that the individual cannot question. The dignity dimension is therefore inseparable from the procedural dimension. A biometric system that can be challenged, explained, and reversed does less dignitary harm than one that cannot.

Distributive Justice and the Healthy Worker Effect

The third ethical pillar is distributive justice, and it concerns who bears the cost of genetic and biometric screening. Consider a firm that uses genetic susceptibility testing to identify workers at elevated risk from occupational exposures. If those workers are excluded from the roles in question, the risk is not removed—it is redistributed to workers who happen not to carry the relevant variant, and ultimately to workers who are less able to refuse the role. This is the healthy worker effect operating as a form of adverse selection, and it is ethically troubling because the employer's precaution is achieved by shifting risk onto a less advantaged population rather than by eliminating the hazard.

This is why some state laws providing for genetic testing by employers to determine susceptibility to toxic chemicals or substances in the workplace have been criticized on the ground that cleaning up the environment would enhance the working conditions for all employees and would alleviate the need for genetic testing of individual employees. The point is generalizable: whenever a hazard can be remediated at source, individual-level screening is the inferior remedy both ethically and operationally, because it substitutes a distributional solution for an engineering one. Policy recommendations in this area accordingly propose that employment organizations be prohibited from using genetic information to affect hiring or the terms, conditions, privileges, benefits, or termination of employment unless the organization can prove that the information is job related and consistent with business necessity, and that organizations be prohibited from requesting or requiring collection or disclosure of genetic information prior to a conditional offer of employment, with written and informed consent required for each request, collection, or disclosure.

Genetic Exceptionalism and the Moving Target of Accuracy

An ethical analysis has to take into account the counterargument. If the precision and predictability of the results of genetic testing improve with time, some examples of employers using information from genetic testing can actually be ethically justified. The point here is that the justification depends on the condition – it is not true that employer use of genetic testing is justifiable at present, but it might be in the future if improvements in science take place. A test which can predict the occurrence of a certain disease that threatens the safety of an occupation during a certain period of time is another matter morally.

The literature, however, calls for caution, and not for pragmatic but moral reasons. The adoption of any changes in the law must take place carefully, if at all, because people have been genetically tested under the assumption that they will never be discriminated against on the basis of their genetics in terms of job and health insurance. This argument is based on reliance, as the ethicalness of the genetic testing procedure rests on the promise of the testee being free from discrimination. Employers, in making use of genetic information even under existing legal guidelines, are making the promise void and consequently inflicting a cost on public health that does not register in corporate accounts. In a society where access to healthcare, whether by the sick or by the healthy, is highly valued, strict measures against genetic discrimination and health discrimination in employer-sponsored insurance must be enforced.

The second reason supporting restraint is that population-based genetic diversity is largely independent of performance in a job, meaning that the payoff from screening is low compared to its ethical costs. The one exception to this principle

– where there really is an interaction between genes and the environment for the job in question because the exposure cannot be avoided – is where the solution is least likely to involve screening and is more likely to involve exposure management.

Attitudinal Evidence and the Legitimacy Constraint

The third factor is one of legitimacy, which asks whether the screened population perceives such practices as legitimate. Survey results reveal that there exists a significant difference in attitude between employers and employees which may play a role in determining whether genetic screening can continue in practice. Employee attitudes towards being subjected to genetic screening were found to become more positive when no results had to be communicated to the employer, and employers who fell under the auspices of GINA were found to be more accepting of hiring applicants who had been found to have a genetic condition than non-GINA employers, with GINA employers also being less likely to favor genetic testing requirements for new hires.

This research indicates how vital it is to guarantee the right to privacy for an individual in connection with genetic testing. The recommended action is the individual's exclusive right to reveal the results of genetic testing on his or her own, to reduce the possibility of discrimination in the workplace and ensure the maximum benefit from health measures. It is important to stress the following idea because it is contrary to the two prevailing options of policy—the permissibility of access for employers and prohibition of testing—and it introduces the third option, when the result of testing is in the hands of an employee. It is the position of governance rather than just privacy, and it relates to the main point of the paper: the issue of ethics is not the existence of genetic information, but its movement control.

Research Design and SPSS Analysis Protocol

Purpose of the Empirical Component

These ethical considerations make up testable hypotheses regarding employer and employee behavior, and there is a precedent in the literature for measuring them through surveys specifically within the same context of genetic data and workplace relationships: a survey study conducted on employers and employees working in firms regulated by GINA and those not under GINA regulation in which 100 employers and 500 employees were surveyed regarding their attitudes toward genetic testing and impact of the employer-employee relationship and imposed government regulations. This research design proposes an extension of this methodology to include biometric data alongside genetic data in order to compare these two types of data. The tables below outline the measurement methodology and statistics that will be employed; where numerical values are provided, they are from studies and where placeholders are provided in the cells, they represent the output format of the field data (Table 2).

Variables and Coding Scheme

Table 1 describes the variables, their definitions, and how they will be coded in SPSS.

Table 1: Variable Specification and SPSS Coding Scheme

Variable name	Construct	Operational definition	SPSS coding
HIRE_GEN	Willingness to hire on genetic information	Likert 1–7: likelihood of advancing a candidate with positive predictive test	Scale 1–7
HIRE_BIO	Willingness to mandate biometric enrolment	Likert 1–7	Scale 1–7
DISCLOSE	Employer access to results	Binary: employer access permitted = 1; employee-controlled = 0	0/1
CONSENT_VOL	Perceived voluntariness of consent	5-item scale, mean score	Scale 1–5
TRUST	Trust in employer data handling	4-item scale, mean score	Scale 1–5
REGIME	Regulatory status	GINA-covered vs. non-covered employer	0/1
SIZE	Organization size	1 = <250; 2 = 250–999; 3 = 1000+	Ordinal 1–3
SECTOR	Industry sector	Safety-critical vs. non-safety-critical	0/1
ROLE	Respondent role	Employer vs. employee	0/1

Hypotheses and Procedure Mapping

Table 2: Hypotheses and corresponding SPSS procedures

No.	Hypothesis	Statistical procedure
H1	Employees express greater willingness to test when disclosure to the employer is not required	Paired-samples t-test on willingness measures under disclosure and non-disclosure conditions
H2	Perceived voluntariness of consent is lower among employees than employers perceive it to be	Independent-samples t-test
H3	Regulatory coverage is associated with reduced support for mandatory genetic testing of new employees	χ^2 test of independence; binary logistic regression with REGIME as predictor
H4	Safety-critical sector predicts support for genetic screening	Binary logistic regression: HIRE_GEN on SECTOR, SIZE, ROLE
H5	Trust in employer data handling moderates the relationship between regulatory coverage and support for screening	Hierarchical multiple regression with interaction term (REGIME × TRUST)
H6	Consent voluntariness scores differ across organization size categories	One-way ANOVA with post hoc Bonferroni comparison

Synthesis of Available Quantitative Evidence

Instead of listing fictional coefficients, table 3 collects the quantitative results which are known to exist within the existing academic literature on attitudes towards surveillance and disclosure. These numbers are real and may serve as a benchmark or a prior for an empirical investigation into the usage of genetic and biometric data.

Table 3: Published quantitative findings relevant to genetic and biometric surveillance

Source domain	Sample	Statistical result
Electronic monitoring and well-being (meta-analysis)	70 independent samples; 233 effect sizes	Job satisfaction r = −0.10; stress r = .11; performance r = −0.01; counterproductive work behaviour r = 0.09
Electronic performance monitoring perceptions	1,119 respondents	Monitoring perception increases privacy invasion, reduces organizational trust, increases stress, reduces individual performance (Kalischko & Riedl, 2023)
Workplace surveillance and worker well-being	3,508 Canadian workers	Surveillance perceptions indirectly associated with increased psychological distress and lower job satisfaction via stress proliferation (Glavin et al., 2024)
Genetic testing disclosure attitudes	100 employers; 500 employees	Employees more willing to test when not required to disclose; GINA employers more willing to hire positive-testing candidates; GINA employers less likely to support testing mandates for new employees

The meta-analytic data in table 4 are the most directly useful. The interpretation of these is significant for the ethical argument, since monitoring has a slight negative impact on job satisfaction and a slight positive impact on stress but has no correlation with performance and a slight positive correlation with counterproductive work behavior—a finding that questions the utility of surveillance (Siegel et al., 2022). In terms of genetic and biometric testing, the above findings call for a strict proportionality test, since a monitoring measure that is intrusive, identity-related, and irrevocable should not be adopted in light of a performance justification that lacks meta-analytic support.

Below is the chart of meta-analytic correlations, which is the only estimate of effect size in table 4 with a known sampling base (Fig. 1).

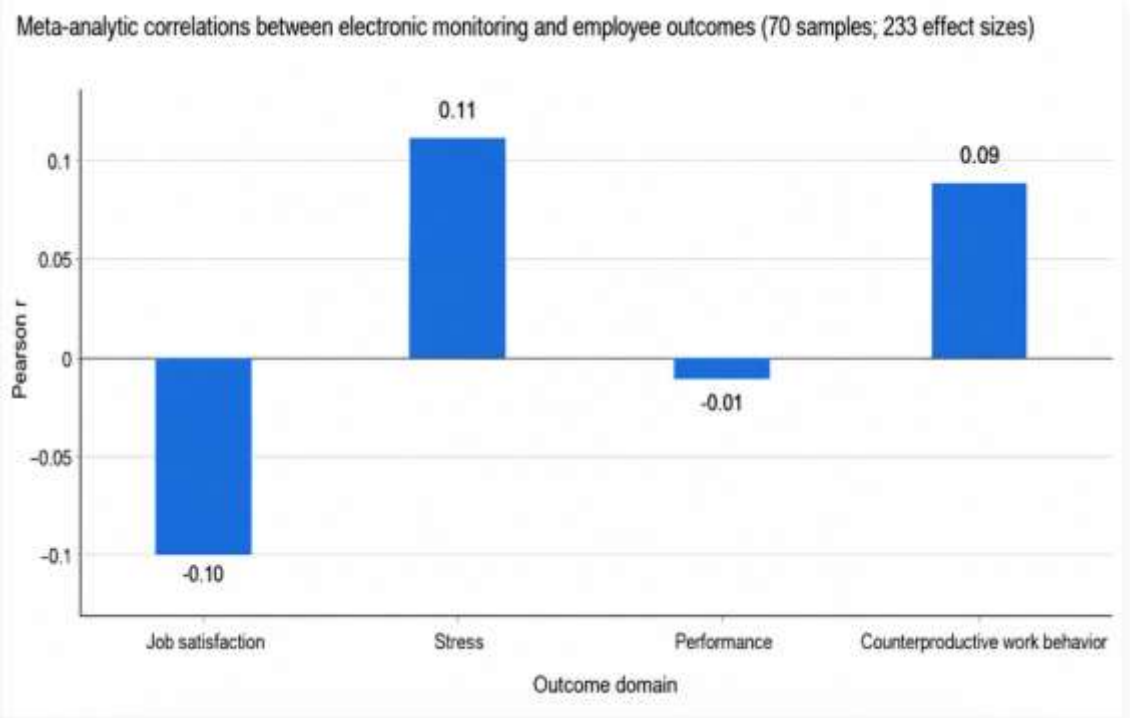


Fig. 1: Meta-Analytic Correlations Between Samples

Three caveats must be noted concerning any such analysis. First, samples of employers and of employees cannot be used interchangeably: there are systematic differences in response sets, and the ROLE variable must be thought of as a classification variable and not a covariate in attitude equations. Second, given the modest size of the effect sizes observed in table 4, studies of this kind will tend to be underpowered when employing small samples, and the precedent sample of one hundred employers and five hundred employees is an indicator of the required size. Third, exposure of the bias statistically does not settle the ethical problem: the aim of the empirical work is to find out what employers and employees really think and do in order to make normative arguments applicable to real institutions and not just to idealized institutions.

Discussion

Doctrinal and ethical considerations lead to the following four conclusions.

First, genetic and biometric data are regulated by different, differently motivated laws, and the interaction of the respective gaps is apparent. While genetic data are protected against discrimination and not against the acquisition on the basis of conditional offer, as the ADA allows employers to perform medical exam prior to placement that could include taking a blood sample with the genetic data included biometric data are usually unprotected in the employment context at all, and the acquisition of it is generally a condition of employment. Consequently, while the former cannot legally inquire about genetic disorders, the latter can acquire such information using the biometric approach.

Second, the ethical arguments for genetic testing for employment purposes are far less broad than those of employers interested in enhancing productivity and controlling health care costs. The only two arguments that stand up to close scrutiny are protection of health and prevention of harm to others, and genetic testing should be done in extreme cases only after careful review of its scientific basis. As the former is invalidated in all cases where the problem could be solved at source the latter is reduced to roles which cannot avoid exposures and create third-party risk.

Third, the argument against relaxing protections due to reliance on the current laws is crucial even when the case for accuracy is taken into account. With more accurate testing becoming available, some of the cases might become ethically acceptable, but changes in laws if any will have to be made carefully if at all since the people have consented to genetic testing with no expectation of genetic discrimination at work or health insurance (Chapman et al., 2019). Expansion of such activities by employers, even lawful, creates an externality on clinical genetics.

Finally, the direction in which regulation is traveling is towards the assignment of responsibility to provider/deployer and not individual choice. Under the EU AI Act, where employment systems are categorized as high-risk, the responsibilities extend to all those who might be affected by the system and not just to employees and under the proposed mandatory federal biometric measures where risk information must be provided prior to deployment, consideration time must be given and alternative non-biometric means be considered. Consent-based practices of management will be increasingly at odds with such logic of regulation.

Managerial Implications and Governance Framework

The analysis underlies a governance architecture that is based on six commitments.

Do a purpose test before a data test. There shall not be any collection of genetic or biometric information until the employer articulates a purpose that meets the narrow criteria of protection of the individual's health or prevention of third-party harm and that cannot be met through means of exposure control or engineering controls or other means.

Consider genetic testing as exceptional and scientifically sound. Genetic testing can be allowed only in exceptional circumstances, with each test being individually assessed for its scientific merit and subjected to rigorous reviews. This entails a validation document for the test, review and rationality assessment of the test based on an anti-discrimination paradigm.

Place control over the outcome in the hands of the employee, not just notice of the process. In the survey literature, the most compelling finding about good governance of testing is that people are more likely to test when they do not have to report the results to their employers. For this reason, organizations must disassociate testing from reporting: allow testing for health reasons under conditions of strict privacy, while leaving the reporting decision up to the individual, in keeping with the recommendation that individuals have sole responsibility for disclosure of genetic testing results.

Avoid using consent as the tool of legitimacy. Consent as an argument is limited by inequalities in bargaining power and cannot be used as a justification for a policy decision employers need to make their case based on necessity and proportionality, and see consent as a tool for reinforcing a legitimate justification. Consent forms can and should be kept, but the argument does not depend on it.

Prevent biometric intrusions through design and respect dignity. In their recruitment process, employers must not employ biometric systems related to financial accounts, reduce third-party storage of templates, indicate the length of template retention, notify employees of risks before enrollment, give them time to consider, and offer non-biometric options. Due to the fact that biometric interference with people’s privacy and dignity gets even worse when the issue of control over the access to sensitive places is raised such applications require the most justification.

Take up the deployer obligations voluntarily. Not relying on enforcement and without delay, employers must notify all impacted employees, contractors, and applicants as the AI Act requires from the deployer of the technology and publish the scope, purpose, the period of retention, and governance of processing of genetic and biometric data. Besides being good reputation practice, voluntary adoption of the obligation will reduce the harm caused to people due to dependence because of genetic testing.

Limitations

There are three limitations that must be recognized. Firstly, the regulation analysis is limited mainly to the US and EU; other constitutional systems, especially as regards privacy and collective bargaining, might have a quite different view on these issues. Secondly, the empirical part of the research is in the form of a research protocol – tables include such aspects as variable specification, hypotheses, procedures and results reporting format; however, quantitative data used in the paper comes from previously conducted research and not newly gathered information. New data gathering will be necessary for the testing of hypotheses using regression models. Finally, the ethical considerations of the matter are made with regard to the existing evidentiary position in the field of genetic predictions. However, if one day a connection between genotype and ability to work was proved as precisely as it happens now with traditional methods of selection, the justification part of the analysis will need to be redone, although the reliance-based critique of law reform will remain valid.

Conclusion

Genetic and biometric information holds a special place within the category of information that can be gathered by employers about their employees, since such information describes probabilities and not behaviors or abilities. Such a special place imposes ethical responsibilities that are not fulfilled by the prevailing paradigm of permission-driven workplace data governance. In situations where inequality of power hampers the legitimacy of consent, the act of documenting consent is insufficient without any purpose being established.

The aims that withstand criticism are few in number. The protection of one's health and avoiding harm to others are the only reasons that might allow genetic tests to be carried out during employment; however, these justifications apply in exceptional cases, and that each test is validated and evaluated. Since the reason for protecting, one's health disappears where it can be fixed at its source, the range of proper screening is limited and may be reduced even more in the future due to better controlling the sources of exposure. The reason of relying makes a case for prudence: people agree to undergo genetic tests, assuming that the tests will not be abused in the context of employment.

References

Lemmens, T. (1997). "What about your genes?" Ethical, legal, and policy dimensions of genetics in the workplace. *Politics and the Life Sciences, 16*(1), 57–75. https://doi.org/10.1017/S0730938400020281

Brandt-Rauf, P. W., & Brandt-Rauf, S. I. (2004). Genetic testing in the workplace: Ethical, legal, and social implications. *Annual Review of Public Health, 25*(1), 139–153. https://doi.org/10.1146/annurev.publhealth.25.101802.123012

Rothenberg, K. H., Fuller, B., Rothstein, M. A., Duster, T., Ellis Kahn, M. J., Cunningham, R., Fine, B. A., Hudson, K., King, M.-C., Murphy, P. D., Swergold, G. D., & Collins, F. S. (1997). Genetic information and the workplace: Legislative approaches and policy challenges. *Science, 275*(5307), 1755–1757. https://doi.org/10.1126/science.275.5307.1755

Harmon, E. (2024). Out of hand: Why federal protection of biometric privacy is a pressing issue in U.S. employment. *Wyoming Law Review, 24*(2), 601–623. https://doi.org/10.59643/1942-9916.1511

Holland, P., & Tham, T. L. (2020). Workplace biometrics: Protecting employee privacy one fingerprint at a time. *Economic and Industrial Democracy, 43*(2), 501–515. https://doi.org/10.1177/0143831X20917453

Giedrewicz-Niewińska, A. (2025). Protection of employee biometric data. *PRAWO i WIĘŹ, 59*(6). https://doi.org/10.36128/3ygwgq22

Quimbita, M. J. P., & Carrillo, A. F. (2025). Tratamiento de datos biométricos laborales: consentimiento vs. derechos fundamentales en Ecuador. *Arandu UTIC*, *12*(3), 3613-3632. https://doi.org/10.69639/arandu.v12i3.1583

Schwartz, J. (2012). *Employer and employee attitudes toward genetic testing in the workplace* [Thesis, Columbia University]. Columbia Academic Commons. https://doi.org/10.7916/d86116fx

Chapman, C. R., Mehta, K. S., Parent, B., & Caplan, A. L. (2019). Genetic discrimination: Emerging ethical challenges in the context of advancing technology. *Journal of Law and the Biosciences, 7*(1). https://doi.org/10.1093/jlb/lsz016

Yusifli, Z. (2024). European Union: The "bouncing ball" effect of the EU Artificial Intelligence Act on employment relations. *Journal of AI Law and Regulation, 1*(2), 228–232. https://doi.org/10.21552/aire/2024/2/9

Siegel, R., König, C. J., & Lazar, V. (2022). The impact of electronic monitoring on employees' job satisfaction, stress, performance, and counterproductive work behavior: A meta-analysis. *Computers in Human Behavior Reports, 8*, 100227. https://doi.org/10.1016/j.chbr.2022.100227

Kalischko, T., & Riedl, R. (2023). On the consequences of electronic performance monitoring in organizations: Theory and evidence. *Digital Transformation and Society, 3*(1), 50–79. https://doi.org/10.1108/DTS-10-2022-0054

Glavin, P., Bierman, A., & Schieman, S. (2024). Private eyes, they see your every move: Workplace surveillance and worker well-being. *Social Currents, 11*(4), 327–345. https://doi.org/10.1177/23294965241228874