Sir Bernard Silverman FRS

- Chief Scientific Adviser to Government, appointed to the Home Office in 2010 with original contract repeatedly extended. I stood down after seven years in 2017 to pursue a portfolio career.
- Current portfolio encompasses research, consultancy, and scientific and social scientific advice to government and beyond.
- World leader in the research field of statistics. A pioneer in the area of computational statistics (work underlies many current aspects of data science). Research collaborator widely across the disciplinary range. Now a leader in Modern Slavery studies. Recognised by leading international awards, fellowships and honorary degrees.
- Broad management and leadership within government, academia and the third sector. Chair of Trustees of a number of charities.
- Consultant in many areas of industry, commerce, finance, law and government.
- Knighthood 2018 "for Public Service and Services to Science".

Portfolio academic, adviser, consultant, committee chair (2017- present)

My current portfolio encompasses a range of different activities building on my past work and developing new areas. The main aspects are listed below.

Chair of Geospatial Commission (20%, 2021-2026): The Geospatial Commission (hosted by the Cabinet Office) provides strategic oversight of the geospatial ecosystem in the UK, setting geospatial strategy, policy and standards, and makes targeted investments in data projects that accelerate innovation and adoption of geospatial data applications. It has a formal relationship with six partner bodies (the Geo6): British Geological Survey, Coal Authority, UK Hydrographic Office, HM Land Registry, Ordnance Survey and Valuation Office Agency and an informal relationship with ONS.

Professor of Modern Slavery Statistics, University of Nottingham (20%, 2018-2022): The study of modern slavery involves many important areas, to do with deepening our ability to understand, quantify and combat this crime. My work included research on technical statistical aspects, involvement in research of the broader team, knowledge exchange through leadership of the Modern Slavery Evidence Unit, and advisory work, for example serving on the advisory board to the Independent Anti-Slavery Commissioner, the Prime Minister's Task Force, and the reference group to the Alliance 8.7 Knowledge Platform, part of the UN response to the relevant development goal. I continue with research and consultancy in this general field.

Chair of Technology Advisory Panel, Investigatory Powers Commissioner: (2017-2022): The Investigatory Powers Act 2016 requires the establishment of a Technology Advisory Panel to give advice to the Commissioner on matters relevant to his work on overseeing the use of investigatory powers by public authorities which include law enforcement, the intelligence agencies, prisons, local authorities and other government agencies. I established the panel from scratch. Full details of the advice we have already given (which has been extensive) are classified. In this context "technology"

includes all areas of science and mathematics and for example has extended to understand ways in which privacy can be understood and quantified.

Methodological Assurance Panel, Census: This panel was set up as part of the Office of National Statistics project to modernise the 2021 census and possibly pave the way for future censuses (or equivalent) based only on big data and administrative sources. Its remit has now been broadened to include broader aspects of the ONS's work. We review, assure and challenge many different aspects and advise the National Statistician. I set up the panel and now lead it.

UK Research Integrity Office, Chair (2014-2019): Over my five years' tenure, the Office more than doubled in number of members, revenues, etc. More importantly, it gained far more recognition and traction for example through our work with the House of Commons Science and Technology Committee, which highlighted UKRIO's key role and contribution to this vital area.

Parliamentary Office of Science and Technology, Board Member POST is Parliament's in-house source of independent, balanced and accessible analysis of public-policy issues related to science and technology. I am one of four non-parliamentary members of the Board, which oversees POST's objectives, outputs and programme of future work.

Economic and Social Research Council (ESRC): I am a member of the ESRC Council, which works with the Executive Chair to shape the ESRC's strategy and to support the overall mission of UK Research and Innovation (UKRI) to maintain the UK's world-leading position in research and innovation.

Chief Scientific Adviser, Home Office (2010-2017)

My full-time post at the Home Office required a combination of scientific, diplomatic, managerial and political skills to fulfil the parliamentary and public expectation that policies and operations are properly informed by the insights that science can bring. At a time of decreasing resource and increasing public scrutiny, I built close relationships with the Home Secretary and with Ministers in many different areas, and regularly gave evidence to Select Committees. I attribute my success to the ability to assimilate and present scientific evidence in a clear, authoritative and succinct way appropriate to the audience. I had to explain scientific issues and principles (in any discipline) in clear and simple terms to Ministers and senior officials. I believe that a good scientist should be able to make difficult things simple (not the other way round). The post had several interconnected aspects:

- independent scientific advice to the Home Secretary, Ministers and officials on the whole range of topics relevant to Home Office business
- leadership of international collaborations and relationships, notably with US Department of Homeland Security
- sponsorship and support of independent advisory committees such as the Advisory Council on the Misuse of Drugs
- participation in the cross-government network of Chief Scientific Advisers chaired by the Government Chief Scientific Adviser
- external engagement, e.g. with universities, Research Councils and National Academies
- leadership, management and professional oversight of Home Office Science, a division of about 500 scientists and social scientists, supporting Home Office policy

and operations in crime/policing, migration/borders, and counter-terrorism. They included the Home Office Centre for Applied Science and Technology, the national DNA database, the Animals in Science regulation unit, and teams of specialists in operational research, economists, statistics and social research.

Leaving aside classified topics, which constituted much or most of my work, these are some examples from the broad range of my activities:

- My work on quantifying the scale of Modern Slavery, using statistical techniques never previously deployed in this area, was the keystone of the Government's Modern Slavery strategy and legislation, and received very wide public attention (including front page coverage in most national newspapers).
- Detailed work on the multiple chemistries yielding DNA profiles gave the judiciary (including the Lord Chief Justice personally) assurance about a new standard for the DNA database, allowing added precision and greater freedom for scientific and industrial innovation.
- Research on the subsequent criminal behaviour of those arrested but not charged underpinned the retention periods laid down for forensic samples and data in the Protection of Freedoms Act 2011.
- I remedied the problems of forecasting passport demand and introduced a new approach which was simpler, more robust and more accurate.
- Insights from operational research dramatically reduced the occasions on which long queues form for checking individuals at the border.
- I took a cross-Government lead on distributed ledger technology (which underpins Bitcoin, blockchain, etc).
- I transformed the way that the Government works with the Advisory Council on the Misuse of Drugs.
- I built, reshaped and refocused the Home Office Science organisation at a time of considerable change and pressure.
- My input had an important impact on the (classified) National Risk Register.
- A flavour of my classified work can be grasped from feedback I received from a colleague: "Bernard has made a really substantial and positive contribution to resetting the direction of our science and technology programme and providing leadership on key priorities. He has made a key contribution on horizon scanning on biological terrorism. He has given the UK's contribution real credibility and worked closely with the US DHS. Second, Bernard has been a key player in new governance arrangements that have helped us reset the direction of our S and T programme, aligning our work much more closely with our policy priorities and subjecting individual projects to much closer scrutiny. Bernard has also been a great ally in endorsing the message to my own team that a project which doesn't address a priority policy/delivery problem won't get funded, no matter how interesting."

Academic career (1975-2009)

My work for government built on a world-leading academic career. I won the only Gold Medal in the International Mathematical Olympiad 1970 awarded to a competitor outside the then Soviet bloc. Rather than remaining a purely theoretical mathematician, I moved towards statistics as an area where my mathematics could be put to wide practical use. I worked for a period in industry, where I designed/programmed and managed the production of the first pocket programmable calculator. My core statistical research hit the "sweet spot" of the continual increase in computer power and availability over the last three decades of the twentieth century which presaged the later "big data" revolution; my approach of building methodology with strong theoretical underpinning and wide practical applicability has been extremely influential worldwide, both on the application and development of statistics. I was one of the youngest full professors in the country and was the first UK-based statistician to win the American statistical societies' award "for the outstanding statistician under 40". I was elected Fellow of the Royal Society (FRS) nearly 25 years ago, and am the recipient of a number of honorary doctorates, as well as many other medals and awards. I am past President of the Royal Statistical Society and the (U.S.) Institute of Mathematical Statistics.

I have undertaken a wide range of collaborative applied work, both with academic colleagues and as a consultant. I have provided consultancy in areas from nuclear energy and oil exploration to stockbroking and advertising, as well as for legal cases in matters both financial and forensic. My collaborations with academics span the range of disciplines in the social, physical and life sciences.

My first 25 years as an established academic were spent at the Universities of Bath and Bristol, combined with visiting appointments world-wide, particularly at Stanford, California. At Bath, I was involved in many aspects of the administration of the School of Mathematics and of the University more generally; it was exciting to be a member of a university which was developing so quickly from humble origins to its leading position among its generation of universities. At Bristol, the Statistics Group which I headed became one of the three leading statistics departments in the UK, with a substantial international reputation.

From 2003 to 2009, I was Master of St Peter's College, Oxford. During my tenure, the Master's role was very much that of a Chief Executive Officer. I oversaw substantial changes, involving large turnover of non-academic staff (managing necessary reductions in certain areas), introduction of new financial and management systems and practices, and a "generational change" in the academic staff and in the College's general academic attitude. Under my Mastership the endowment doubled, as a result of successful fundraising, a new investment strategy, and fundamental improvements in financial management. In the succeeding decade these foundations enabled the endowment to double again.

Simultaneously, I took a leading role in the governance of the wider University, mirroring similar roles at Bristol and Bath. I was a member of the University's Council and the main

Education and Resource/Planning committees. I had pivotal involvement in the introduction of a new resource allocation system for the University and its Colleges; I sat on senior appointment and merit award committees and led a Council enquiry into the Staff Pension Scheme. I served on the main Animal Experimentation ethics committee, which involved delicate and difficult decisions in a sensitive area.

Voluntary and professional activity (see full CV for more details)

I have always maintained a portfolio of voluntary and professional roles, in leadership of professional and scientific organisations, in broader matters of consultancy and advice, and in charity administration, management and resourcing. I have been a Council Member (Trustee) of Oxford and Bath Universities and the Royal Society. I have served on university advisory and assessment boards in the USA, Hong Kong and Singapore. I have chaired the UK Research Integrity Office and the UK Mathematics Trust.

Before taking up the Home Office role, my government service included: a non-executive directorship of the MoD analytical services agency, a pivotal role on the GM Science Panel chaired by Sir David King, detailed work for the Anderson Inquiry into the handling of the Foot and Mouth Epidemic in 2001 and for the Statistics Commission on census adjustment following the 2001 census, and panel chairmanship for the Department for Transport on the Project for the Sustainable Development of Heathrow. I have been a member of the Arts and Humanities Research Council and the Emerging Technologies Group of Innovate UK, and have had deep involvement in successive Research Assessment / Excellence exercises.

Professor Sir Bernard Walter Silverman FRS

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1970–73	Undergraduate, Jesus College, Cambridge
1973–74	Graduate Student, Jesus College, Cambridge
1974–75	Research Student, Statistical Laboratory, Cambridge
1975–77	**Research Fellow of Jesus College, Cambridge**
1976–77	**Calculator Development Manager, Sinclair Radionics Ltd**
1977–78	**Junior Lecturer in Statistics, Oxford University** and
1977–78	Weir Junior Research Fellow of University College, Oxford
1978–80	**Lecturer in Statistics, University of Bath**
1981–84	**Reader in Statistics, University of Bath**
1984 & 1992–93	Head of Statistics Group, University of Bath
1984–93	**Professor of Statistics, University of Bath**
1988–91	Head of School of Mathematical Sciences, University of Bath
1993–2003	**Professor of Statistics, University of Bristol**
1993–97 & 1998–99	Head of Statistics Group, University of Bristol
1999–2003	Henry Overton Wills Professor of Mathematics, University of Bristol
2000–03	Provost of the Institute for Advanced Studies, University of Bristol
2003–09	**Master of St Peter's College, Oxford**
2010–17	**Chief Scientific Adviser to the Home Office**
2018–22	**Professor of Modern Slavery Statistics, University of Nottingham**[1]

I have also held senior/professorial fellowships at the Smith School of Enterprise and the Environment and the Wellcome Trust Centre for Human Genetics at Oxford; and honorary/visiting appointments at the London School of Economics, Lancaster University, Green Templeton College and the University of Nottingham. I now have the status of ***Emeritus Professor at the Universities of Oxford and Bristol***.

Degrees and qualifications[2]

1973	Bachelor of Arts, Cambridge (Wrangler)
1974	Master of Mathematics[3], Cambridge (with Distinction)
1977	Doctor of Philosophy, Cambridge
1989	Doctor of Science, Cambridge
1993	Chartered Statistician, Royal Statistical Society
2000	Bachelor of Theology, Southampton[4] (First Class Honours)
2014–17	Honorary degrees listed below

Awards and honours

1970	First Prize, International Mathematical Olympiad
1974	Mayhew Prize for Mathematical Tripos Part III, Cambridge
1976	Smith's Prize, Cambridge University

[1] 20% time.
[2] I also hold the Cambridge MA degree and, by incorporation, the Oxford degrees of MA, DPhil and DSc.
[3] Degree conferred 2011. Formerly Part III of Mathematical Tripos.
[4] Awarded through Southern Theological Education and Training Scheme, Salisbury.

1984	Royal Statistical Society Guy Medal in Bronze
1985	Special Invited Paper[5], Institute of Mathematical Statistics
1988	Technometrics Special Discussion Paper, American Statistical Association
1991	Presidents' Award of American Statistical Association, Institute of Mathematical Statistics, Biometric Society (ENAR and WNAR) and Statistical Society of Canada for 'the outstanding statistician under forty' (the COPSS award)
1993	Fulkerson Lecturer, Cornell University
1995	Royal Statistical Society Guy Medal in Silver
1997	Fellow of the Royal Society
1999	Special Invited Paper[6], Institute of Mathematical Statistics
2000 & 2020	Corcoran Lecturer, Oxford University
2001	Member of Academia Europæa
2002	Original Member, Highly Cited Researchers database, ISI® [6]
2003	Honorary Fellow, Jesus College, Cambridge
2010	Honorary Fellow, St Chad's College, Durham
2014	Fellow of the Academy of Social Sciences
2014–	Honorary Doctor of Science, St Andrews (2014), Lancaster (2016), Bath (2017), Bristol (2017)
2018	Knighthood "for Public Service and Services to Science"

Past visiting appointments outside UK[7]

1978 & 1979	Department of Statistics, Princeton University
1979	University of Paris VI
1980	Sonderforschungsbereich 123, University of Heidelberg
1981	Mathematics Research Center, University of Wisconsin–Madison
1981	Department of Statistics, Johns Hopkins University
1984	Depts of Statistics and Biostatistics, University of Washington
1984	University of Frankfurt
1985	University of California, San Diego
1985	CSIRO Division of Mathematics and Statistics, Canberra, Sydney, Melbourne and Perth
1987–2005	Department of Statistics, Stanford University[8]
1991	Mathematical Sciences Research Institute, Berkeley
1997–98	Fellow, Center for Advanced Study in the Behavioral Sciences, Stanford, California

[5] These are now termed 'Institute Medallion Lectures'.

[6] According to a survey published in the Higher Education Guardian, I was the third most cited British mathematician in the period 1981 to 2000. In the field of mathematics, I had the largest number of 'highly-cited' papers (defined as those in the top 1% of cited papers in the field).

[7] Almost all of these appointments were with some pay and were for periods of 1–3 months in each year shown.

[8] Frequent visitor (on average for two months every alternate year).

Major Professional Activities and Service

Private and Public Sector and Government

UK Government prior to/in addition to/subsequent to appointment as Home Office Chief Scientific Adviser: GM Science Review Panel, 2002–3. Owner's Advisory Board member (non-executive director) Defence Analytical Services Agency (1998–2009). Consultant to the Statistics Commission, 2003. Consultant to UK Government Inquiry (the 'Lessons Learned' Inquiry) into Foot and Mouth Epidemic, 2002. Chair, Peer Review Panel on the Project for the Sustainable Development of Heathrow, 2005–06. Prime Minister's Task Force on Modern Slavery (2016–19). ***Technology Advisory Panel, Investigatory Powers Commission (Chair, 2018–22; Member 2022–23). Chair, Methodological Assurance Panel to the National Statistician, Office for National Statistics (2018–). Chair, Geospatial Commission (2021–26)***

External consultancy and related work: Industrial consultancies in statistics, micro-electronics and mathematics for companies concerned with stockbroking, calculator and computer design, aerospace, oil exploration, advertising, railway signalling. A method designed for oil-well log interpretation was patented by the company involved. Consultancy on statistical aspects of legal cases (especially financial and forensic). Statistical advice to the press. Advice to police in criminal cases. Substantial long-term consultancies with Nuclear Electric, National Audit Office, Ministry of Defence, Agilent Technologies, Mass Spec Analytical Ltd. Radio and television programmes on statistics. Interviews with press and radio. Chief Scientific Adviser, PUBLIC.IO (2018–20). Advisory Board, Goodbox Ltd (2019–22).

Learned Societies and Scientific Organisations

Royal Society: FRS (1997). Council (2009–10). Working Group on the State of the Nation in the teaching of Science and Mathematics (2007–10; Chair 2008–10). Wolfson Merit Awards Committee (2006–09). Dorothy Hodgkin Fellowships Committee A (1999–2004; chair 2003). Sectional Committee 1 (1998–2001; Chair 2001). Conference Grants Committee (1998–2001). Research Grants Committee A (1997–2000, Chair 1999–2000). Working Group on eligibility for Fellowship (2016-17). Exhibitor, Summer Science Exhibition, 1999. Organizer, Discussion Meetings, 1988 and 1999. Diversity Committee (2016–20). ***Project on Digital Assistive Technologies and Inclusive Data (Chair 2024–25).***

Institute of Mathematical Statistics: President, 2000–01. Fellow (1987). Council (1991–94; 1997–2000; 2007–10.). Special Invited Papers Committee (1986–88). COPSS award nominating committee (Member 1995–97, Chair 1997). Editor, *Annals of Statistics* (2007–09). Many committees and working parties.

Royal Statistical Society: President, 2010. Honorary Secretary (1984–90). Council Member (1982–90). Research Section Committee (1979–82), and numerous other committees and working parties, in particular the 1990 Working Party on Official Statistics. Chair of Research Section (1991–93).

Other bodies: Founding organizer of European Young Statisticians' meeting, 1979. Fellow of International Statistical Institute (1986). Bernoulli Society European Regional Committee (member 1986–92, chair 1988–90). Bernoulli Society Council (1999–2003). Patron, Royal

Institution Wessex Mathematics Master Classes. Chair, Joint Mathematical Council of the United Kingdom (2003–06). Chair, United Kingdom Mathematics Trust (2004–10). British Academy Policy Centre Advisory Group (2010–13). Chair of Trustees, United Kingdom Research Integrity Office. (2014–19). Big Mathematics Initiative, Strategy Board and Implementation Group (Chair). (2019-20). ***Board Member, Parliamentary Office of Science and Technology. (2017–). Executive Committee Member, Proto-academy phase of the Academy for Mathematical Sciences (2022–).***

Research Advisory

Editorial: Editor, Oxford University Press Statistical Science Series (1983–87). Associate Editor, *Annals of Statistics* (1982–85), *Journal of the Royal Statistical Society, Series B* (1980–84). Editor of *International Statistical Review* (1991–96). Editor, Chapman and Hall Monographs on Statistics and Applied Probability (1985–97) and Interdisciplinary Statistics Series (1993–97). Editor, Wiley Statistics Series (1997–2001). Editorial Board, *Inverse Problems* (1998–2000). Editor, *IMS Bulletin* (2002–06). Editor, Cambridge University Press Statistics series (2003–09). Editor, *Annals of Statistics* (2007–09). Founding Editorial Committee, *Annual Reviews of Statistics and Its Application* (2012–17).

UK Research and Funding Councils: SERC Statistics Panel (1990–94). EPSRC Mathematics College (1994–97 & 2000–03). Frequent member and chair of grant awarding panels for EPSRC. Statistics Research Assessment Panel, HEFCE 2001 Research Assessment Exercise. Steering Group, International Review of UK Mathematics, 2003–4. Chair, Subpanel 22 (Statistics) and Member, Panel F (Mathematics), HEFCE Research Assessment Exercise 2008. Emerging Technologies and Industries Steering Group, Technology Strategy Board/Innovate UK (2012–16). Council, Arts and Humanities Research Council (2012–17). ***Council, Economic and Social Research Council (2019–)***

Other national and international bodies: Frequent reviewer for (US) National Science Foundation, NSERC (Canada), Australian Research Council, etc. Scientific Committee, EURANDOM, Netherlands (1997–2003). Scientific Steering Committee, Isaac Newton Institute, 2003–6. Advisory Board, Statistics Department, Carnegie Mellon University (member 2002, academic chair 2006) and National University of Singapore (2010). Convenor, Physical Sciences Panel, Hong Kong Research Assessment Exercise 2014.

Oxford University

Oxford University Committees: Council (2007–10). Educational Policy and Standards Committee (2007–8). Planning and Resource Allocation Committee (2008–10), and member of Budget Subcommittee. Joint Resource Allocation Advisory Board (representing Chair of Conference of Colleges) 2008–09. Supervisory Committee for Permanent Private Halls (2007–10). Chair of Continuing Education Board (2008–10). Nominating committee for external members of Council (2008–10). Frequent review panels (eg Department of Mathematics, Oxford Internet Institute) and appointment panels (for both professorial and senior administrative appointments). ICT strategy steering group (representing Conference of Colleges), 2005–06. Distinctions Committee (merit awards for professors) 2006–08.

Publications

Over 150 publications including 5 books and over 100 peer-reviewed articles. A full list is available here.