

**Role of Scientists in
Science Communication:
A Survey- Based Report**
CM Nautiyal



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Points to Ponder

- **1. Do People Need Science*?**
- **2. What is it that the Media Serves?**
- **3. Can Scientist Fit the Role?**
- **4. What do the Scientists Feel?**

* Nautiyal CM (2008). JCOM (3), 2008

Why Science?

- 1. For sustenance, health and longevity
- 3. For better living standard & comfort
- 4. Comfort includes physical comfort, convenience such as of communication
- 5. Power against nature
- Everyone should know science not only for material reasons but also for societal and attitudinal reasons.

Need for Communicating Science

There is a general agreement that, more than at any previous period of history, the public need to be made aware of the implications of science and technology in their lives, and of the nature the process that beings new scientific knowledge into being.

PETER DAY

(Ninth Blackett Lecture at INSA, New Delhi)

" A public that doesn't understand how Science works can ; all too easily fall prey to the ignoramuses who make fun of what they don't understand or to the sloaganeers who proclaim Scientists to be the mercenary warriors of today"
- Isac Asimov

To Quench Curiosity



Sustaining curiosity ensures that society doesn't buy the dogmatic explanation and understands the power of science

Quest for Knowledge & Information



The Serpentine Queue to See Vigyan Rail (2005)

Aided by Publicity



Science Express 2007

A Positive Approach

लखनऊ, सोमवार, 21 अगस्त, 2006

हिन्दुस्तान

16
101

हिंगिस मांद्रियल
कप के फाइनल में

देश

बर्निंग ट्रेन
एक्सप्रेस, प
पृष्ठ-12

What Media Has Served

देखो तो, वे फिर दौड़ पड़े मूर्तियों को दूध पिलाने

खबरिया चैनलों ने अफवाह फैलाने में कोई कसर नहीं छोड़ी, बरेली से उड़ी हवा देश भर में फैली

लखनऊ (निस)। मूर्तियों पर आस्था रखने वाले लोग उन्हें 'भोग' जरूर लगवाते हैं पर दूध नहीं पिलाते, लेकिन अगस्त 2006 के तीसरे रविवार को एक बार फिर अफवाह उड़ाने वालों ने देव मूर्तियों को दूध पिलाया और खबरिया चैनलों ने इस अविज्ञानिक चर्चा को प्रचारित करने में पूरी मदद की। तो, सुबह से उड़ी अफवाह रात होते-होते प्रदेश के महत्वपूर्ण शहरों ही नहीं राजधानी दिल्ली और सुदूर उत्तर-पश्चिम में भी उड़ने लगी। एक दिन पहले मुंबई में समुद्र के खारे पानी को दैवयोग से मीठा मानकर पीने वाले अब भले ही बीमार पड़ रहे हों, लेकिन अफवाहों की मानसिक बीमारी पालने वालों का कोई दस्तावेजी रिकार्ड फिलहाल नहीं है। इसलिए 20 अगस्त

का रविवार देव मूर्तियों के दुग्धपान की हास्यास्पद किन्तु चमत्कारिक मानी जाने वाली चर्चाओं के नाम रहा।

देशभर में मूर्तियों को दूध पिलाने वालों की आस्था अपनी जगह है, लेकिन जानकार कुछ इस तरह कहते हैं-

लखिवि. के प्रो. एमपी सिंह-पुरानी मूर्तियाँ अपने रंगों के कारण तरल पदार्थ सोख लेती हैं। इसलिए दूध दिखता नहीं।

केजीएमयू के प्रो. वीके सिंह-मिट्टी की मूर्ति के वायुछिद्र में हवा भरी होती है। अणुओं के बीच 'मैपिंग' में द्रव पहुँच जाता है। लोग भ्रमित हैं। हर मिट्टी की सोखने की क्षमता अलग-अलग होती है। उसके बाद झला गया द्रव बह जाता है।

वैज्ञानिक डॉ. सीएम नैटियाल-यह अंधविश्वास है। अमूमन हर मूर्ति पर पेंट लगा होने से वह कुछ भी सोख

नहीं पाती। दूध में बसा के कारण वह मूर्ति पर कुछ देर रुकता है। उसके बाद बह जाता है।

लखिवि. के डा. महेन्द्र-केशिकत्व प्रभाव (कैपिलरी राइज इफेक्ट) के कारण मूर्तियों पर द्रव पदार्थ पड़ते ही अदृश्य होने लगता है, जो भ्रम पैदा कर देता है।

श्रीरामकृष्ण मठ निरालानगर के अध्यक्ष स्वामी मुक्तिनाथानंद-धार्मिक चेतना व विचार वैज्ञानिक मनोवृत्ति के आधार पर हो। घटना आकर्षित करती है पर इसका वैज्ञानिक आधार नहीं है।

डीएम रमेश त्रिपाठी-लोग अफवाहों से बचें। अफवाह फैलाने वालों के खिलाफ कार्रवाई होगी।

राजधानी में खूब बहा दूध-पृष्ठ 5



मूर्तियों को छोड़िए, नाग देवता को भी दूध पिलाने की खूब कोशिश हुई

Media- Favourites in India of Late

- Total Solar Eclipses (1995, 1999, 2005)
- Alignment of Planets (1995 and 2005)
- Muhnochva menace (2002)
- Earthquake, Land slide (2004), Tsunami (2004), Hurricane (2005)
- Vigyan Rail (Science Train) in 2004- 2005 & 2008
- Mars invaded by Spirit, Opportunity (2004)

The Burning Titles

- **Venus Transit (2004)**
- **Gadgets (all time favourite!)**
- **Stem Cell, health and longevity Research**
- **Global issues of Environment, Global Warming and Ozone Layer Thinning**
- **Large hadron Collider made big news (2008)**
- **But what about Science Congress, NCSC, Conferences in the national media! We seldom see in newspapers what transpires in major international conferences in other countries.**

But Scientists' Language is too technical.

Nature Ordains Simplicity...

- Myosin domain evolution and the primary divergence of eucaryotes (**Evolution: A treasure trove of motors**). 25 Aug-2005
- Crystal structure of a bacterial homologue of Na⁺/Cl⁻ - dependent neurotransmitter transporters (**molecular physiology: intimate contact enables transport**). 8 Sep, 2005

The above shows the title of 2 technical articles and their simplified form for the non-specialist in the research journal **Nature**

**ONLY SOMEONE WHO UNDERSTANDS THIS SCIENCE ,
CAN DO IT WELL**

Can Scientist Fit the Role?

Early 19th century

Photograph from twenty- pound note of Britain, in which faraday replaced Shakespeare



Jagdish Chandra Bose



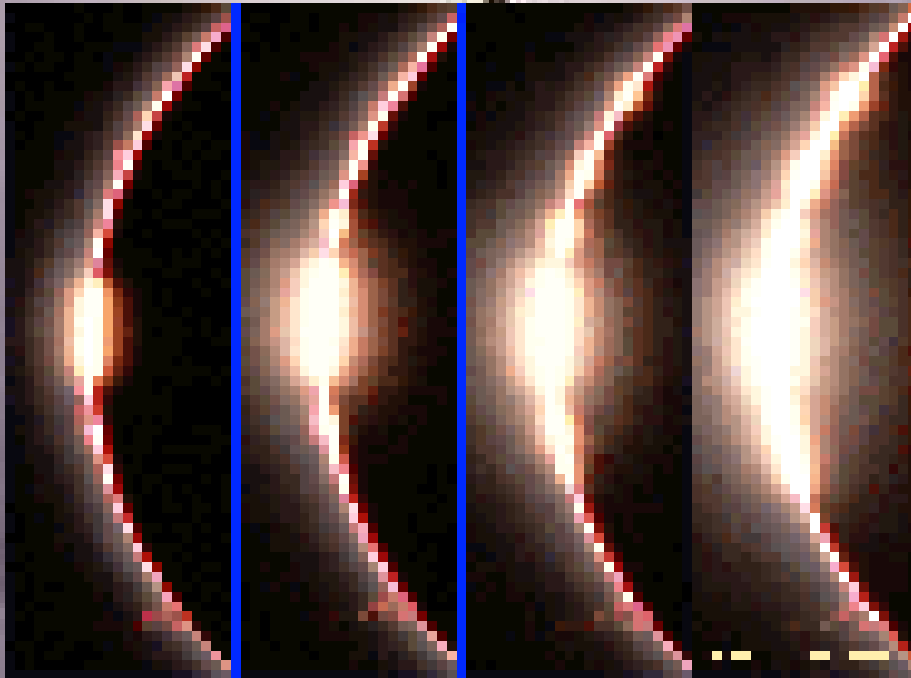
More than 90 years ago: During Bose's demo, Plant didn't respond to KCN, so his student Boshi Sen tasted it himself- it was sweet! The effect of live by a scientist can't be compared with that of a recording.

WHY THE SKY IS BLUE

PUBLIC LECTURE BY

C V Raman

Scientists & Media in Good Role



- Compare with the deserted road scenes in 1980

Total Solar Eclipse- 1995
Live telecast from Iradatganj



What do the Scientists Feel?



The Survey

There were 10 common questions and 3 separate sets of 6 questions to

(i). **Scientists**

(ii). **Science communicators and journalists**

(iii). **Common people**

There were no open-ended questions though in 3 questions a bit of additional information was also sought.

I shall discuss the response of scientists and compare with that of the common people.

The 10 Common Questions

- 1. Name , 2. Country of birth/ language at home
3. Country of present residence 4. Age (a). upto 25 (b). 25+ to 35 (c). 35+ to 50 (d). 50+ to 60 (e). 60+
- 5. Do you follow religious rituals (a). Sincerely (b). For social/ sentimental reasons (c). Never
- 6. Years of education in science? (a). Class I to X (b). Up to XII (c). Ist degree (d). Masters (e). Doctorate
- 7. Nature of work: (a). Scientific research (b). Science-journalist/ Science Communicator (please mention medium) (c). Both (d). Science- teaching (e). Any other (please specify) Please mention work experience in research/ science journalism/ otherwise. Please mention in which of the 3 catagories.
- 8. Do you think scientists should involve themselves in science communication for public? (a). Yes (b). No
- 9. Do you like (a). Reading science fiction (b). Watching science fiction movies?
- 10. Do you think Sci and Tech coverage in media is adequate (a). Yes (b). No

Questions Posed to Scientists

- 11. Do you communicate science to public through any medium? (a). Seldom (b). Occasionally (twice an year) (c). Often (5 times an year) (d). Frequently (once every month or more)
- 12. While talking to press, have you ever been mis-reported? (a). No (b). Yes (how many times so far?)
- 13. Do you think some training in communication would be helpful to you? (a). Yes (b). No
- 14. Do you read science news, which is outside your field, in magazines/newspapers? (a). Seldom (b). Occasionally (c). Often (d). Almost always
- 15. Do you think every one must know some science? (a). Yes (b). No.
- 16. Do you think editor's background being science or otherwise influences science content of the publication? (a). Yes (b). No

To science journalist/ science communicator

11. How'd you rate the scientists as science communicator, on average, on a scale of 1-10?

12. If you talked to scientists and reported, how many, if at all, complained of having been mis-reported by you: (a). Y (b). N

13. Do you think more exposure in science would have helped you in science journalism more? (a). Yes (b). No (c). Not sure (d). It's adequate

14. Do you like to read science articles or listen to/ watch/ attend science programmes/ lectures? Can you remember any particular article or lecture you liked?

15. Do you think every one must know some minimum science (a). No (b). Yes

16. Do you think editor's background being science or otherwise influences science content of the publication? (a). Yes (b). No

Other than scientist or scientist/ journalist

11. From your experience, do you believe that scientists are more organised/ systematic in approach? (a). No (b). Yes

12. In your experience, how are scientists as communicators? (a). Like others (b). Better (c). Worse? Can you recall any exceptional communicator(s)?

13. As a student, did you like science? (a). Yes (b). No (c). Liked but found difficult

14. Do you read or skip science items in news papers/ magazines? (a). Seldom (b). Occasionally (c). Often (d). Almost always

15. Do you believe every one must know some science? (a). Yes (b). No

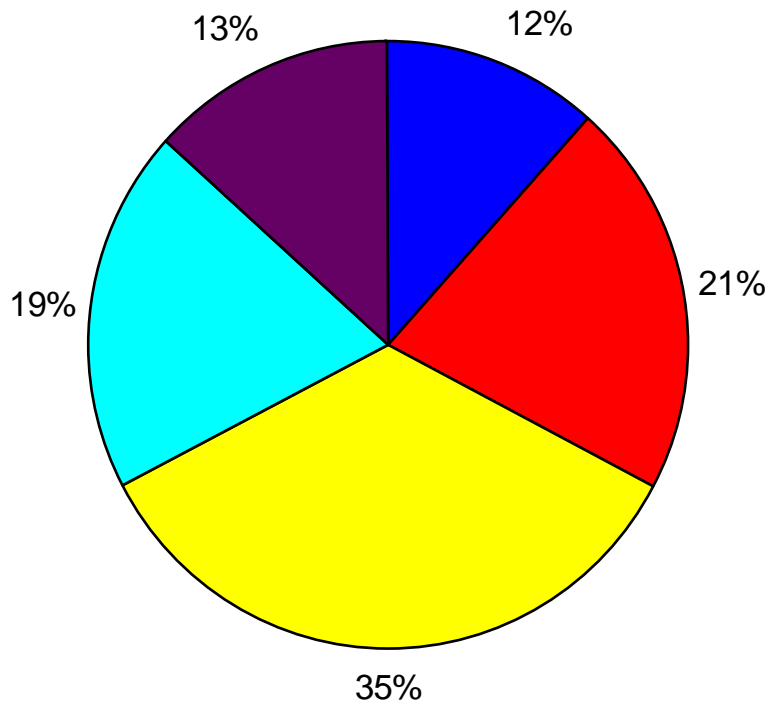
16. Do you think editor's background being science favourably influences science content of the publication? (a). Yes (b). No

The Survey: Overview

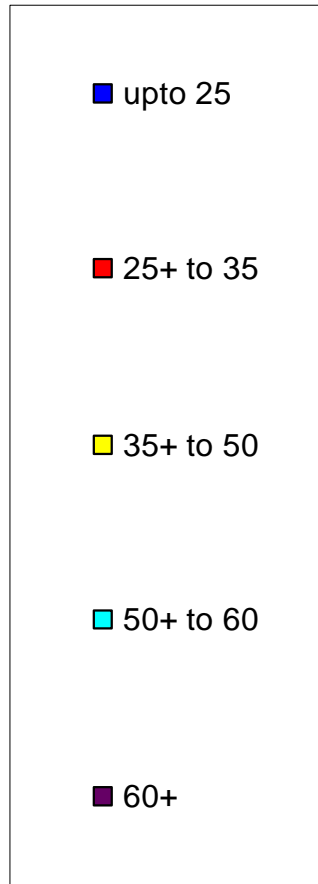
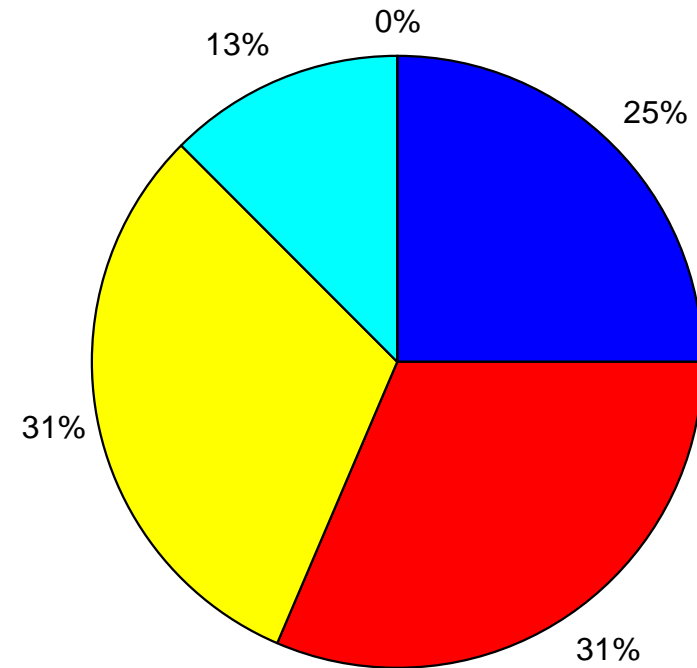
- **Scientists responding to mail form the largest fraction.**
- **Science journalists and those employed in sci com are the poorest in response. This may also be attributed to the fact of author being from a scientists' community basically.**
- **Responses were expectedly mostly from India, one each coming from 5 other countries viz. Russia, USA, Iran, Israel and Singapore of which 3 are of Indian origin.**
- **Ten Indian states and UT's represented: Andhra, Bihar, Chandigarh, Delhi, Gujarat, Kerala, Maharashtra, New Delhi, Panjab, Uttaranchal, Uttar Pradesh.**
- **People with 12 languages : Arabic, Bangla, English, Hindi, Malayalam, Marathi, Panjabi, Persian, Russian, Telgu, Tamil Urdu at home. Some speak more than one language.**

Age of the respondent

Sci, Q4

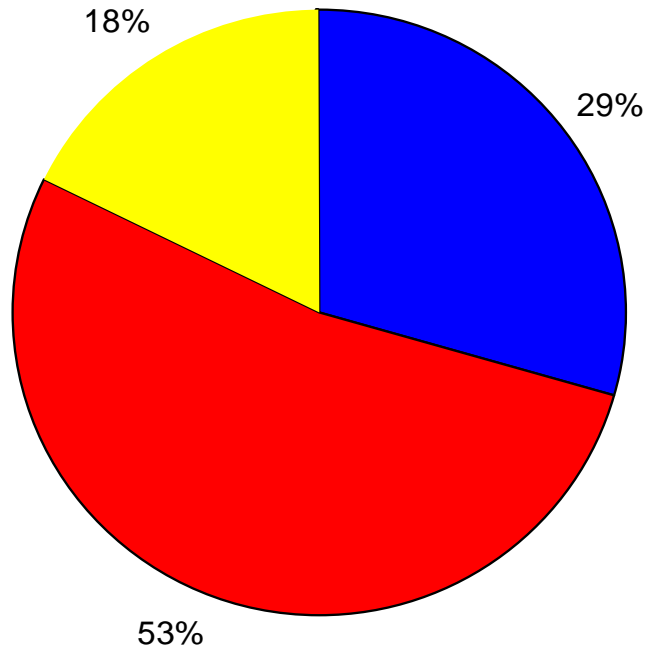


Non Sci, Q4

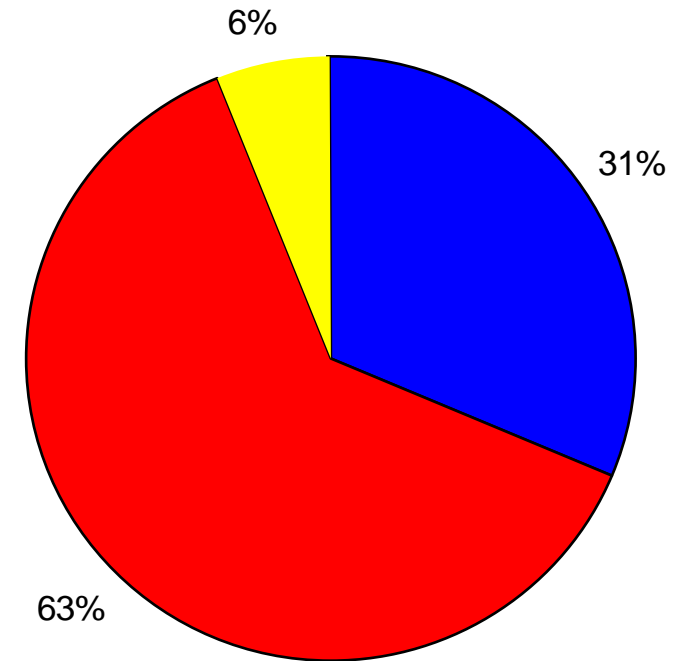


Following religious rituals

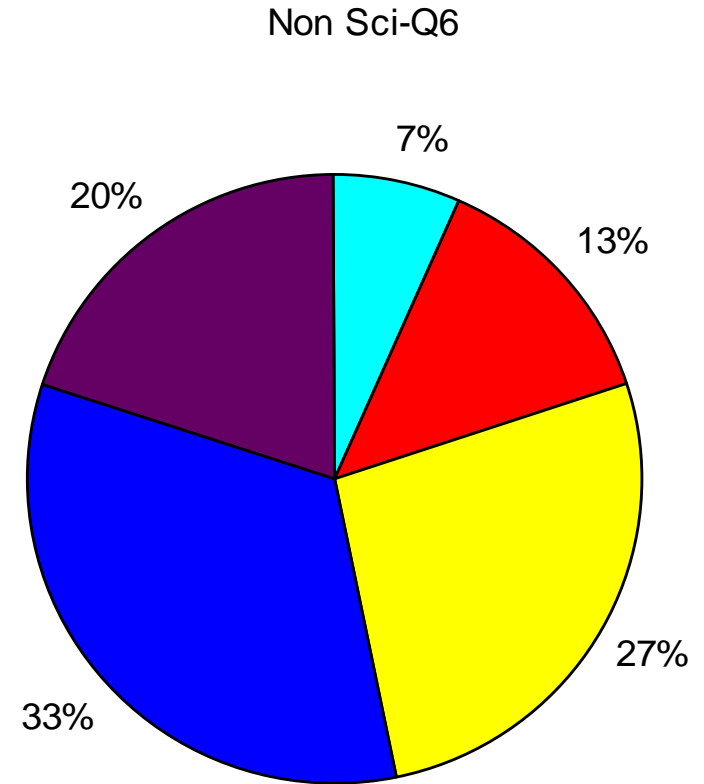
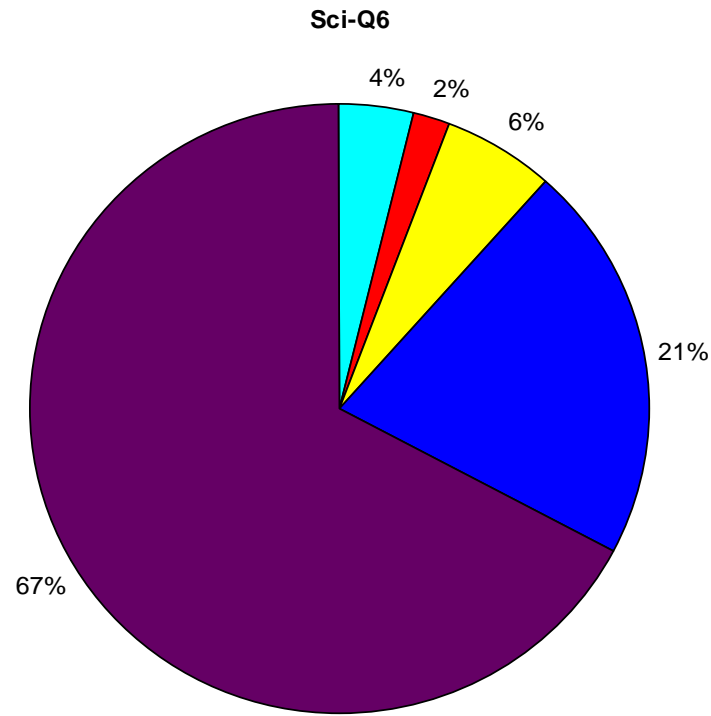
Sci,Q5



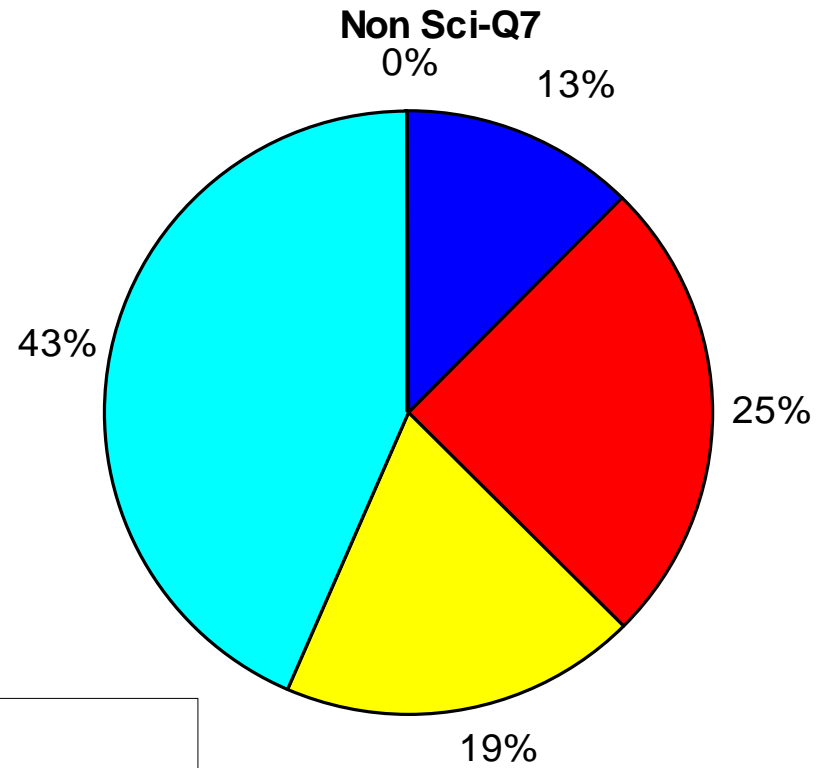
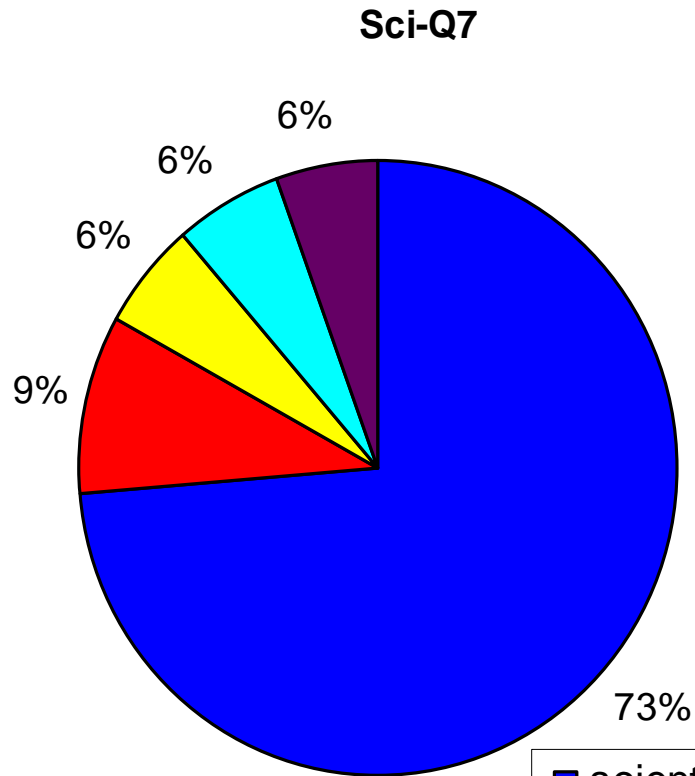
Non Sci,Q5



Years of Education in Science



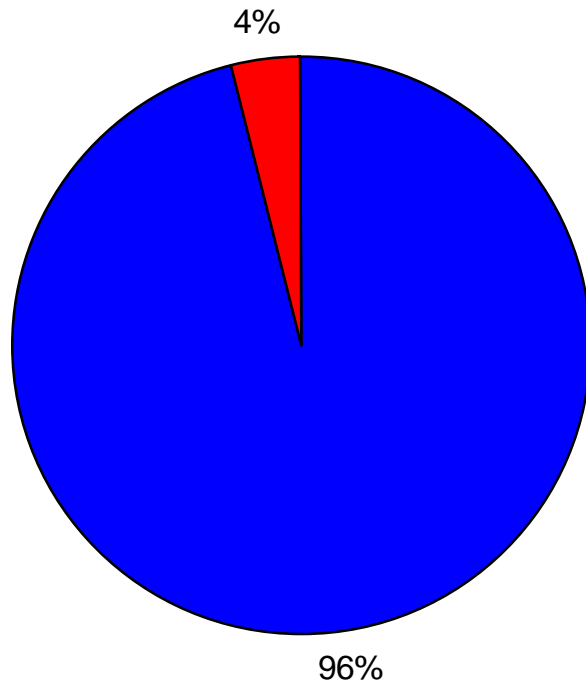
Nature of work



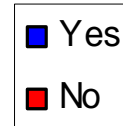
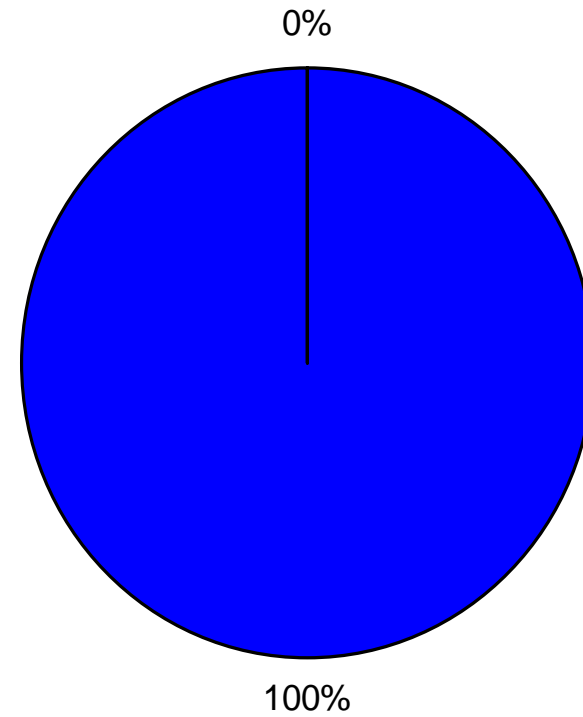
- scientific research
- science journalist/ communicator
- both
- science teaching
- any others

Involvement of scientist in science communication: Desirable?

Sci-Q8

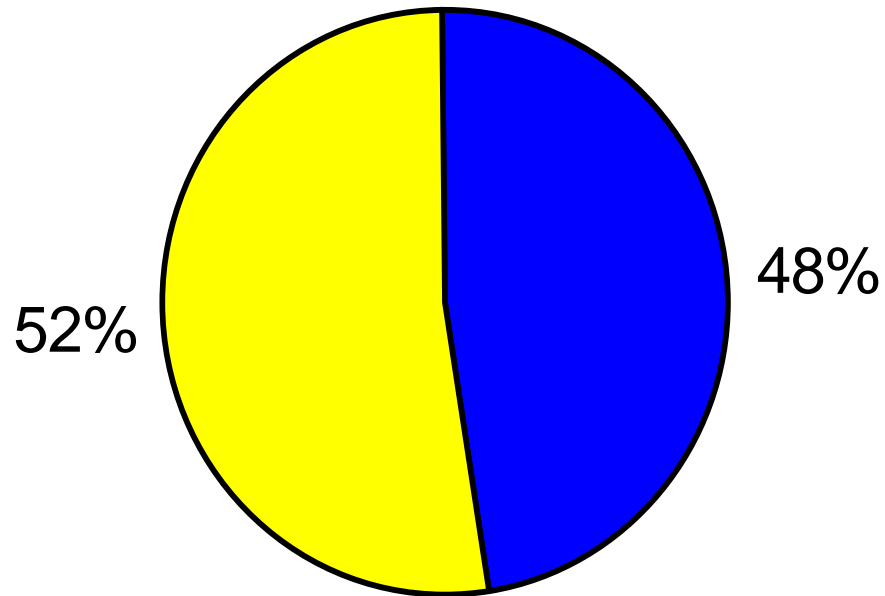


Non Sci-Q8

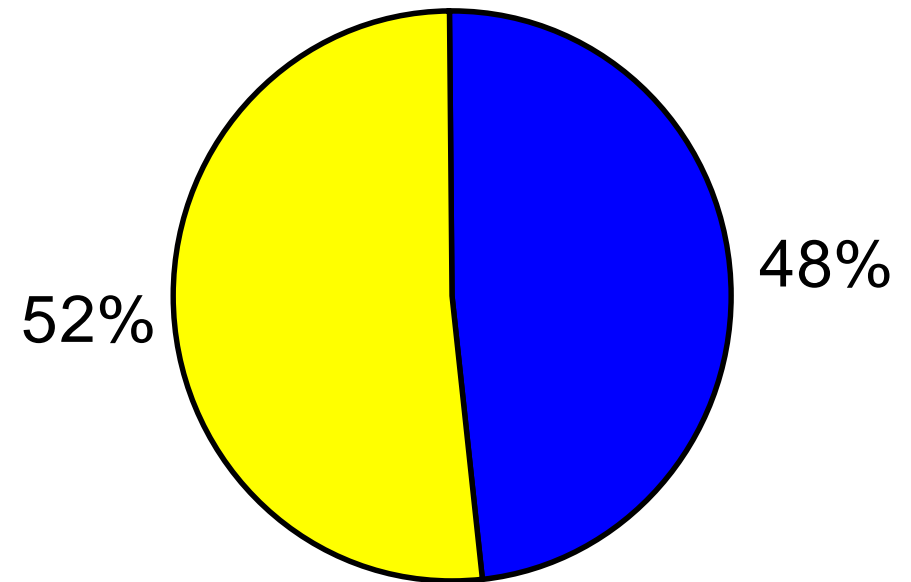


Reading/Watching Sci Fiction

Sci-Q9



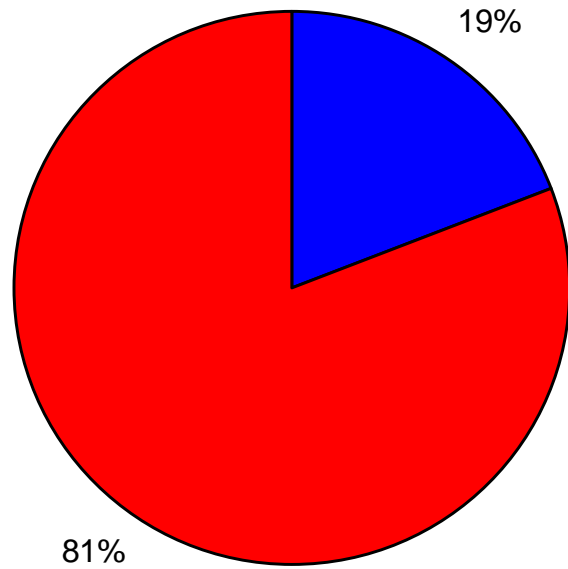
Non Sci-Q9



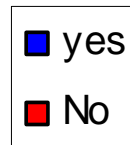
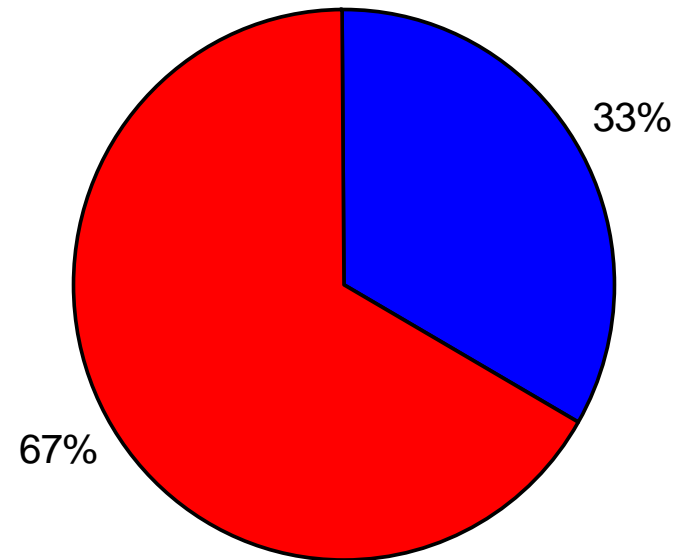
■ reading science fiction
■ watching science fiction

Sci & Tech coverage: Adequate?

Sci-Q10

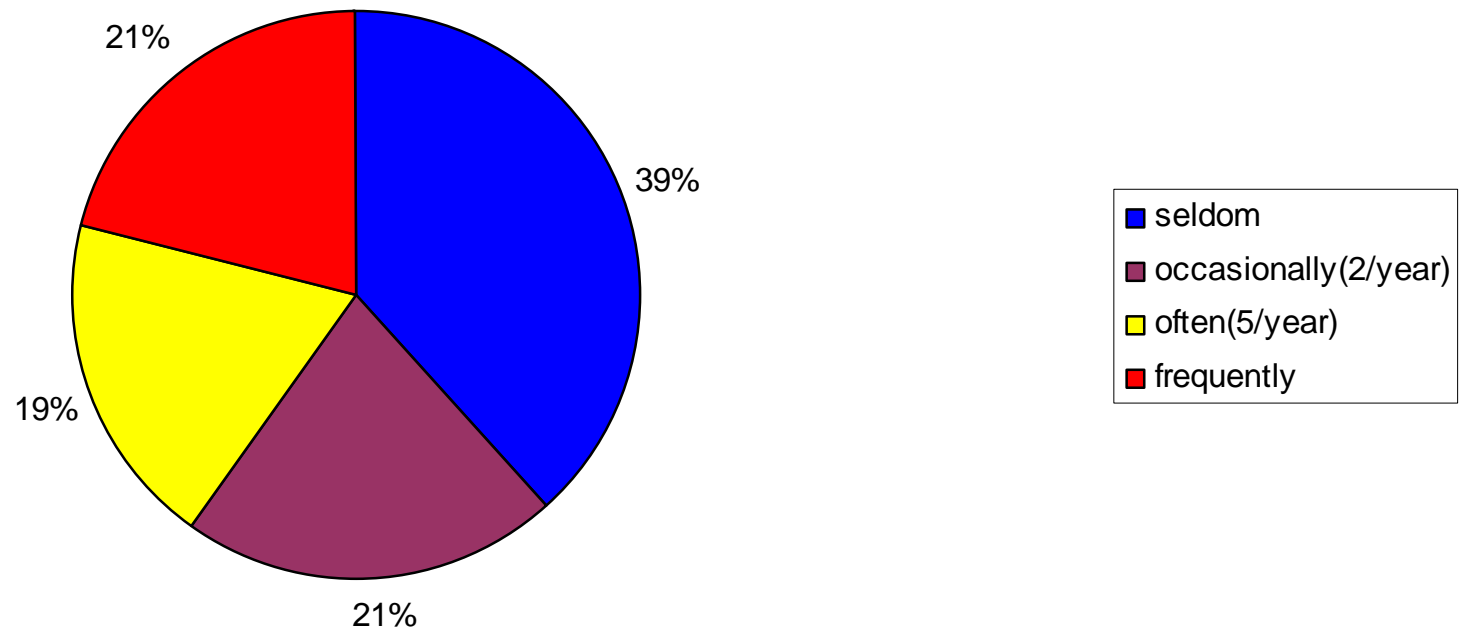


Non Sci-Q10



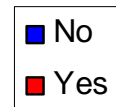
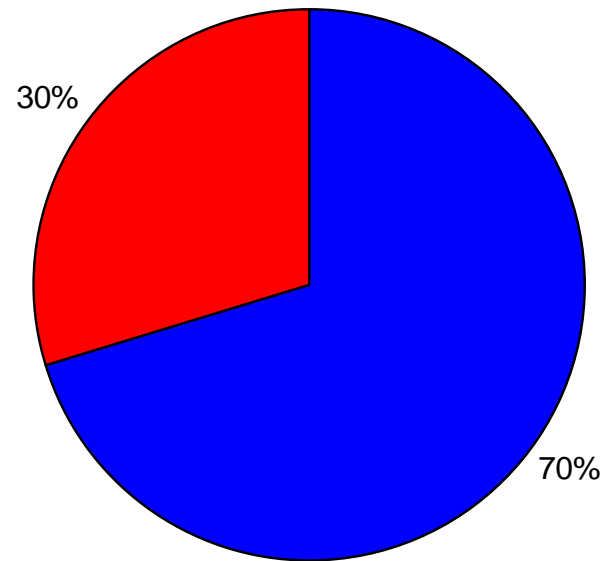
Communicate Science to Public?

Sci-Q11



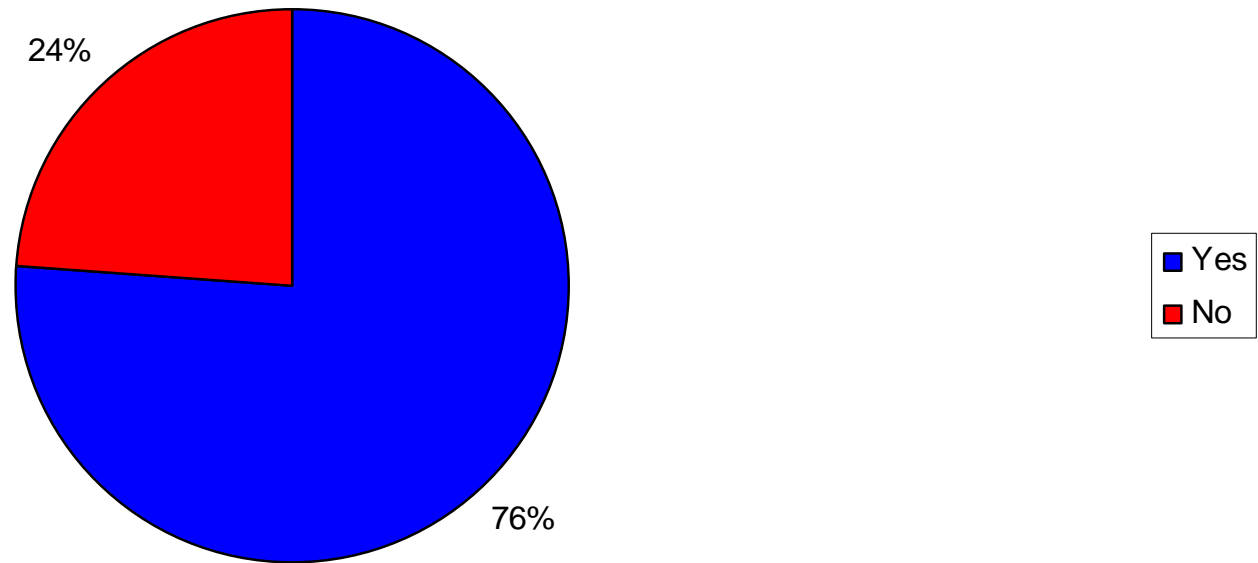
Ever Misreported in Media?

Sci-Q12



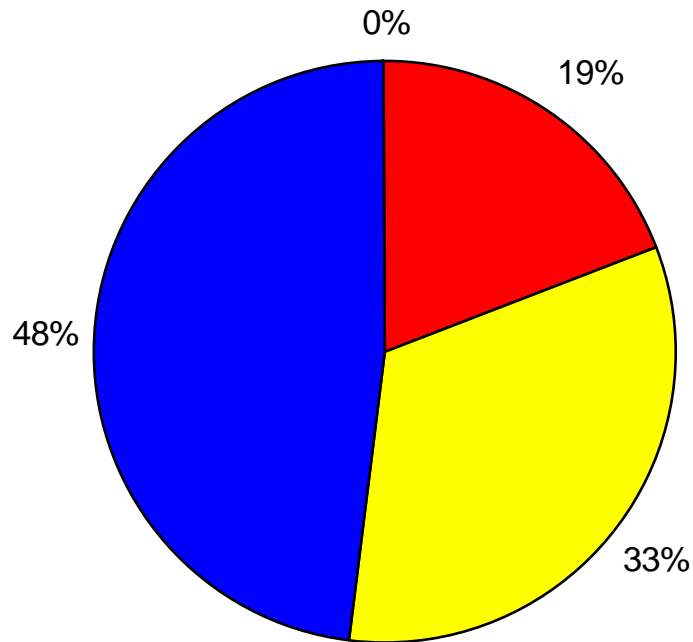
Wish for Training in Communication?

Sci-Q13

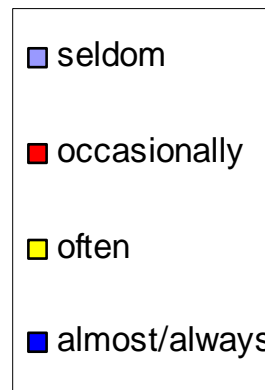
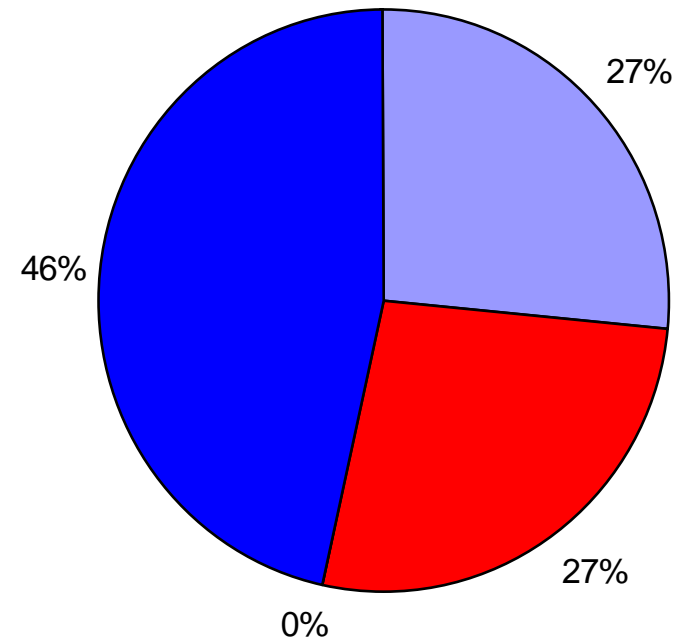


Do you read or skip Other Science/ Any Science items in News paper/magazine

Sci-Q14

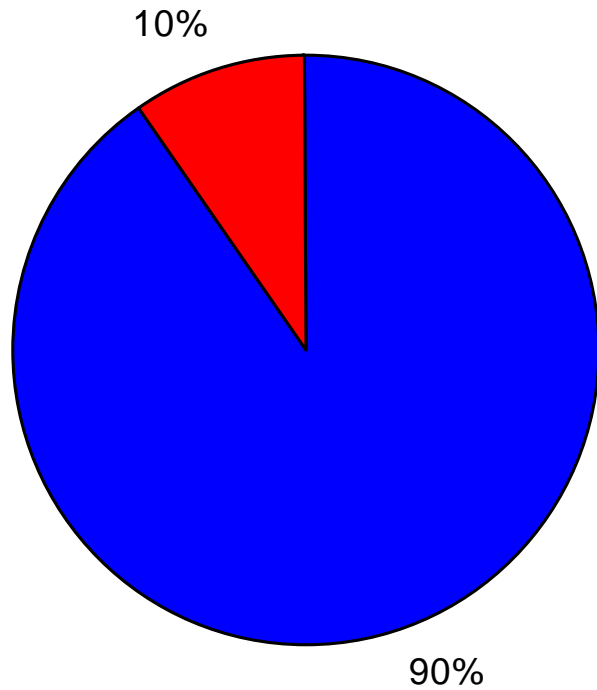


Non Sci-Q14

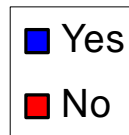
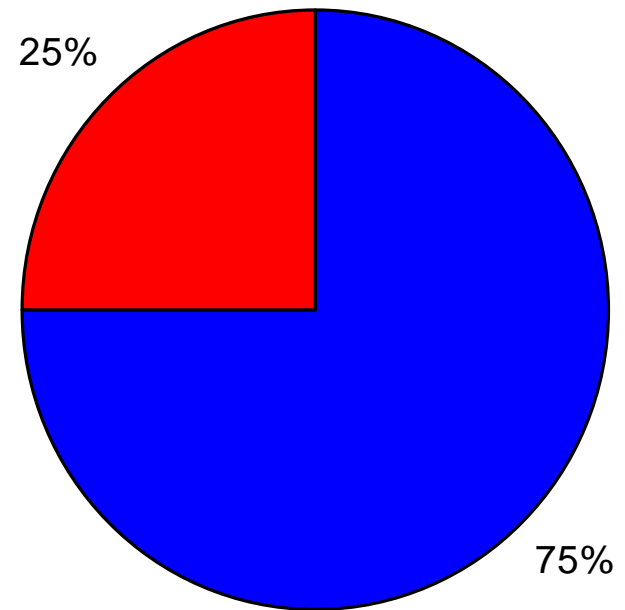


Must Everyone Know Some Science?

Sci-Q15

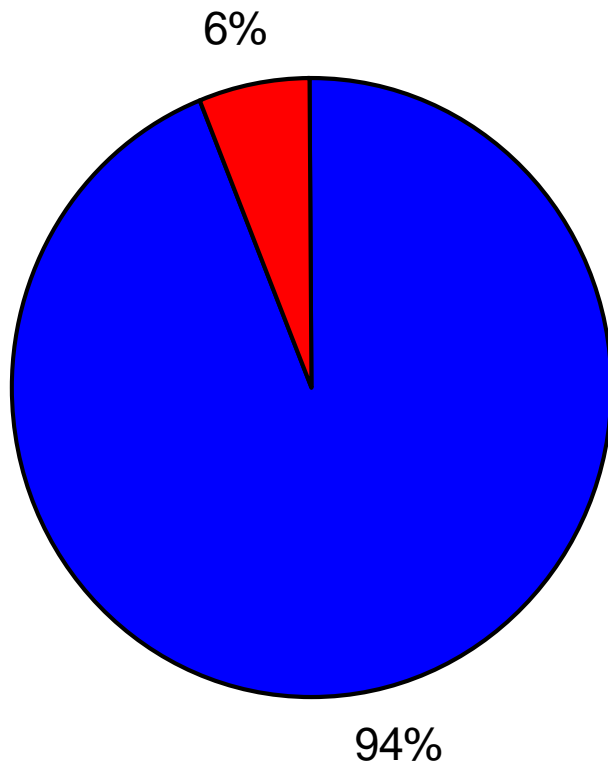


Non Sci-Q15

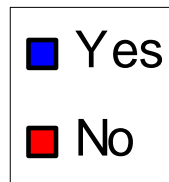
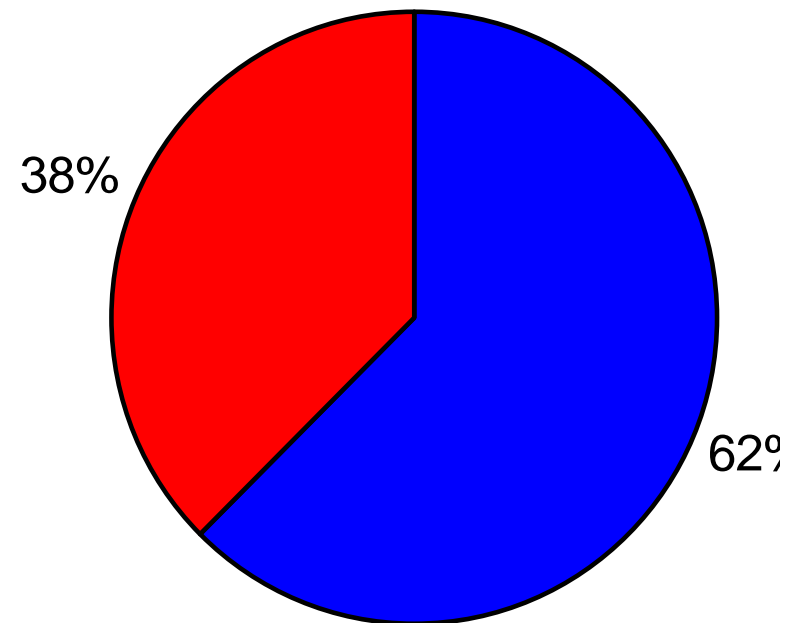


Does Editors With Background in Science Imply More Science in Publication?

Sci-Q16



Non Sci-Q16



Where does this lead to?

But are we clear what we mean by science here?

- Which science is this?
-
- Is it the basic science such as Large Hadron Collider (LHC) or stellar formation and origin of photosynthesis in plants?
- Or we mean science as tool to elevate living standard and health like vaccine?
- Or promoting scientific attitude, anti- superstition beliefs?
- Or more than one or all of these?

Summary & Conclusions

1. Across the spectrum, people feel that scientists must communicate science
2. All the scientists like to read Sci- Fi or watch
3. Most feel that the S&T coverage is inadequate in media
4. Over half of the responding scientists are involved in communicating to public to different degree (selective!)
5. Almost all believe that immaterial of profession, some science knowledge is essential for all
6. Nearly one- third were mis- reported by media sometime
7. This may also mean improving their communication ability and they are not averse to being trained
8. Most of the scientists read news beyond their speciality
9. Almost all (94%) scientists believe that editor with science background means more science

Some Hurdles

- **Some scientists may also have interests at stake at times**
- **Commercial organisations can influence readers by selectively quoting favourable results or conducting research to raise public opinion about their commodity or using media to popularise the commodity**
- **It's not easy to support eating salad in place of expensive tablets**
- **Science and scientific attitude lose to advertisements**
- **In an age of patents and intellectual property rights, freedom gets limited**
- **Being associated with institutions, bound by rule (Exchange of freedom with pensionary benefits etc.!)**

Acknowledgement

- Director, BSIP for permission and facilities
- SAASTA, Global Convention Centre, SA and the organisers of the Conference for support
- Vigyan Prasar, Noida for setting me thinking about this
- Mr. VK Singh for assistance in handling data