

Commentary

What's on the mind of IVF consumers?

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Abstract

During economic downturns demographers note that birth rates often decline as couples are more concerned with job security than providing for an additional child. The effects of economic conditions are likely to be amplified in infertile couples because there is often the need to pay for treatment. To try and understand changes in public interest in IVF over time, this study explored publicly available data (Google™ Insights) that reports changes in internet search activity relative to baseline volumes for search queries entered into Google search engines. Using the USA and the UK as case studies, it was observed that interest in internet searches using the term 'IVF' relative to searches within the infertility category remained relatively unchanged in the USA, with a small decrease observed in the UK. Internet searches using the combined terms 'IVF cost' and 'cost of IVF' have increased over the past 2 years relative to the infertility category. Additionally, inclusion of the term 'cost' appears concentrated in US states without insurance mandates compared with states with mandated insurance coverage. The extent to which Google internet search queries reflect public interest, and more importantly interest from infertile couples, is difficult to know for certain; however, there appears to be increased interest in the cost of treatment.

Keywords: consumer, costs of IVF, fertility treatment, infertility, internet

In many countries, publicly funded subsidy of fertility treatment is limited or non-existent. Consequently, couples often have to pay for treatment themselves (Jones *et al.*, 2007). In countries where patients pay for treatment, it should be expected that infertile couples respond to price and quality signals in their purchasing decisions in the same way that consumers would for any product or service.

During periods of deteriorating economic conditions, two forces could possibly influence patient demand for fertility treatments. Firstly, during economic downturns, demographers note that birth rates often decline as couples are more concerned with job security than providing for an additional child. Secondly, as wages fall, as currently observed in many countries, demand for treatments can also fall because of decreased consumer-purchasing power (i.e. the income elasticity of demand). The extent to which current economic conditions will influence current demand for fertility treatments is difficult to gauge with retrospective IVF monitoring programmes used in many countries.

Predicting the future is challenging – but measuring the present is not much easier, requiring accurate and timely information about consumer interests and demands. To inform readers about a useful publicly available resource, and in an effort to address whether interest in fertility treatments are waning, this study explored Google™ Insights data for the USA and the UK (www.google.com/

[insights/search/#](http://www.google.com/insights/search/#)). Google collects information on internet search queries entered into Google search engines above a certain volume threshold and provides the data as an index of the total volume of search queries.

Of interest to us is that Google Insights data can also be provided by categories assigned by Google using an automated classification engine. This enables users to evaluate changes in growth for particular search terms over time with respect to the first year on the graph (Choi and Varian, 2009). By using search terms likely to be used by infertile couples interested in IVF, this study explored changes in interest in the USA and the UK over time to see whether there are any emerging trends. Furthermore, with respect to the USA, results are disaggregated by state to compare differences in interest level between states.

Of relevance to this research, this study examined interest in the search terms 'IVF' and the combined terms of 'IVF cost' from January 2004 to May 2009 relative to the category 'reproductive health' and sub-category 'Infertility' assigned by Google to these search topics. This exploratory assessment was undertaken as a hypothesis-generating exercise; therefore the results are reported exactly as provided by Google for education and discussion purposes.

Insights data for the USA (**Figure 1**) suggests that interest in IVF relative to the sub-category 'Infertility' has remained constant over the past 5 years. There is some variation in

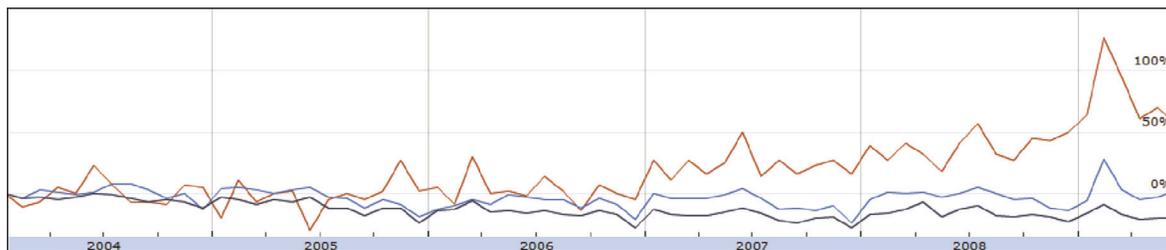


Figure 1. Change in interest in the USA relative to category ‘Infertility’ for the search terms ‘IVF’ (light blue) and ‘IVF cost’ (red) relative to category ‘Reproductive health’ (dark blue). The change in volume for the terms ‘cost of IVF’ showed a similarly shaped curve to that of ‘IVF cost’.

the data that reflects the nature of public interests, with a noticeable reduction in IVF searches during winter months. Growth in interest in the combined search term ‘IVF cost’ was consistent with the infertility sub-category up until the end of 2006. From 2007 onwards, increased internet searches using the combined search term ‘IVF cost’ were observed, which peaked in early 2009.

The pattern of internet searches in the UK for ‘IVF’ and ‘IVF cost’ are less deterministic than those observed in the USA with more variation (Figure 2). However, internet searches using the term ‘IVF’ appear to have decreased in the UK since 2006.

Table 1 reports state-level interest in the USA for the top five states ranked by Google where searches are conducted using the terms ‘IVF’ and ‘IVF costs’. States with mandated insurance coverage are noted. Based on the regional-level search volume data provided by Google, there appears to be an increased likelihood of including the term ‘cost’ in internet searches in states without mandated insurance coverage.

There are numerous challenges in trying to interpret the findings from internet search query data. Firstly, the interest level is restricted to those with access to the internet and using Google search engines. Secondly, the data can’t distinguish whether queries have originated from infertile couples, academic organizations or anyone with an interest in IVF.

Despite these weaknesses, some trends emerge. Data from the USA suggests that interest in the search term ‘IVF’ has remained relatively unchanged over the past few years. However, internet searches including the term ‘cost’ appear to be on the increase in the USA and less obviously in the UK. Furthermore, there appears to be a trend towards increased interest in the search term ‘cost’ in US states without insurance mandates compared with those with mandate coverage.

The predictive capacity of these observations on the demand for fertility treatments is difficult to know for certain. However, if search index data has predictive capacity, then Google’s 72% and 90% market share for US and UK internet

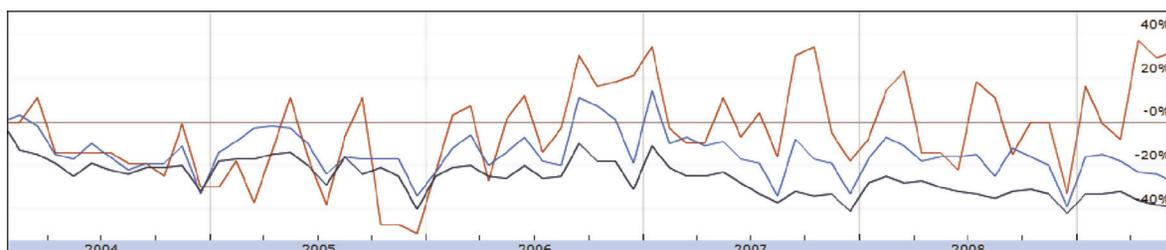


Figure 2. Change in interest in the UK relative to category ‘Infertility’ for the search terms ‘IVF’ (light blue) and ‘IVF cost’ (red) relative to category ‘Reproductive health’ (dark blue).

Table 1. State level interest in the search terms ‘IVF’ and ‘IVF cost’ combined.

| Rank | Interest in term ‘IVF’ | Interest in term ‘IVF cost’ |
|------|----------------------------|-----------------------------|
| 1 | Massachusetts ^a | Texas ^a |
| 2 | New York ^a | District of Columbia |
| 3 | New Jersey ^a | Georgia |
| 4 | District of Columbia | Florida |
| 5 | Maryland ^a | Maryland ^a |

^aStates with mandated fertility coverage. The level and accessibility of insured fertility coverage varies between states.

searches, respectively, should reflect the interests of these countries – at least those with a computer and access to the internet (Hitwise, 2009). It is worth noting that previous studies have investigated the relationship between Google search queries and demand for consumer goods such as automobiles in the USA with some important observations about the present (Choi and Varian, 2009). Perhaps the validity of any predictive conclusions that can be drawn from this data will be apparent when annual utilization data for the USA and the UK is reported in the future.

What does appear clear is that consumer (i.e. the public) interest in IVF has remained steady relative to internet search volumes, at least in the USA, but there is has been increasing interest in the costs of treatment. Exactly how this manifests itself in clinical practice is difficult to know for certain. One possibility is that couples may be more willing to pursue low-cost, low-efficacy interventions such as intrauterine insemination (IUI) before pursuing more expensive treatments. In fact, this study explored the interest level in 'IUI' and 'IUI cost' using Google Trends data and observed a noticeable increase in searches relative to

the sub-category 'Infertility' in the USA and the UK over the past year. Alternatively, when consumers are concerned about cost, there is the likelihood that they shop around more for lower cost clinics and treatments, which could explain the observation of a rise in search queries using the terms 'IVF' and 'cost'.

References

- Choi H, Varian H 2009 *Predicting the Present with Google Trends*. Google Inc., Mountain View, CA.
- Hitwise 2009 *Google Hovering at 72% of U.S. Searches in March 2009*. Available at www.hitwise.com/press-center/press-releases/google-searches-mar-09 [accessed 8 May 2009].
- Jones HW, Cohen J, Cooke I, Kempers R 2007 IFFS Surveillance 2007. *Fertility and Sterility* **87**, S1–S67.

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