

## Finding Top Traffic Sources

### Task

Find where the bulk of the website sessions are coming from, through 2012-04-12

```
SELECT
    utm_source,
    utm_campaign,
    http_referer,
    COUNT(DISTINCT website_session_id) AS sessions_count
FROM website_sessions
WHERE created_at < '2012-04-12'
GROUP BY utm_source,
    utm_campaign,
    http_referer
ORDER BY sessions_count DESC;
```

### Result:

utm_source	utm_campaign	http_referer	sessions_count
gsearch	nonbrand	https://www.gsearch.com	3613
NULL	NULL	NULL	28
NULL	NULL	https://www.gsearch.com	27
gsearch	brand	https://www.gsearch.com	26
NULL	NULL	https://www.bsearch.com	7
bsearch	brand	https://www.bsearch.com	7

### Analysis

The majority of website traffic comes from gsearch nonbrand which has 3613 web sessions generated from there.

## Traffic Source Conversion Rates

### Task

Calculate the conversion rate from session to order. The goal is to have a conversion rate of at least 4%. The amount being bid for advertisements will be adjusted based on the conversion rate.

```
SELECT
    website_sessions.utm_content,
    COUNT(DISTINCT website_sessions.website_session_id) AS sessions,
    COUNT(DISTINCT orders.order_id) AS orders,
    COUNT(DISTINCT orders.order_id)/COUNT(DISTINCT website_sessions.website_session_id) AS conversion_rate
FROM website_sessions
    LEFT JOIN orders
        ON orders.website_session_id = website_sessions.website_session_id
GROUP BY
    1
ORDER BY 3 DESC;
```

### Result

sessions	orders	sessions_to_order_conversion_rate
3895	112	0.0288

### Analysis

The conversion rate is 2.88% which is less than 4%. This means the marketing team will reduce amount spent on bids and monitor these changes.

## Traffic Source Trending

### Task

Based on your conversion rate analysis, in the previous task the bid spend for the gsearch nonbrand campaign was decreased on 2012-04-15. Determine the gsearch nonbrand trended session volume, by week, to see if the bid changes have caused the volume web sessions to drop at all?

```
SELECT
    MIN(DATE(created_at)) as week_start_date,
    COUNT(DISTINCT website_sessions.website_session_id) AS sessions
FROM website_sessions
WHERE utm_source='gsearch'
    AND utm_campaign='nonbrand'
    AND created_at<'2012-05-10'
GROUP BY YEAR(created_at),WEEK(created_at);
```

### Result

week_start_date	sessions
2012-03-19	896
2012-03-25	956
2012-04-01	1152
2012-04-08	983
2012-04-15	621
2012-04-22	594
2012-04-29	681
2012-05-06	399

### Analysis

After the bid changes happened at '2012-04-15', the sessions drop down from 621 to 399, which means the gsearch nonbrand is fairly sensitive to bid changes.

## Bid Optimization for Paid Traffic

### Task

Determine the conversion rates from session to order, by device type? If desktop performance is better than mobile performance we may be able to bid up for desktop specifically to get more volume.

```
SELECT w.device_type,  
       COUNT(DISTINCT w.website_session_id) as sessions,  
       COUNT(DISTINCT o.order_id) as orders,  
       COUNT(DISTINCT o.order_id)/COUNT(DISTINCT w.website_session_id) AS device_type_conversion_rate  
FROM website_sessions w LEFT JOIN orders o  
  ON o.website_session_id = w.website_session_id  
WHERE w.created_at<'2012-05-11'  
      AND w.utm_campaign='nonbrand'  
      AND w.utm_source='gsearch'  
GROUP BY 1;
```

### Result

device_type	sessions	orders	device_type_conversion_rate
desktop	3911	146	0.0373
mobile	2492	24	0.0096

### Analysis

The conversion rate is much better on desktop than mobile so the bids on desktop will be increased.

## Trending w/Granular Segments

### Task

The bids for gsearch nonbrand desktop campaigns were increased on 2012-05-19. Determine the weekly trends for both desktop and mobile so we can see the impact on volume of website visitors?

```
SELECT
  MIN(DATE(created_at))AS week_start_date,
  COUNT(DISTINCT CASE WHEN device_type = 'desktop' THEN w.website_session_id ELSE NULL END)AS desktop_session,
  COUNT(DISTINCT CASE WHEN device_type = 'mobile' THEN w.website_session_id ELSE NULL END)AS mobile_session
FROM website_sessions w
WHERE w.created_at BETWEEN '2012-04-15' AND '2012-06-09'
  AND w.utm_source = 'gsearch'
  AND w.utm_campaign = 'nonbrand'
GROUP BY YEARWEEK(w.created_at);
```

### Result

week_start_date	desktop_session	mobile_session
2012-04-15	383	238
2012-04-22	360	234
2012-04-29	425	256
2012-05-06	430	282
2012-05-13	403	214
2012-05-20	661	190
2012-05-27	585	183
2012-06-03	582	157

### Analysis

The web session volume for desktop users responds well after the bid increase on the date '2012-05-20'. The volume of visitors by device will continue to be monitored to see how changing the bid impacts the session volume by device. We will also continue to monitor the conversion performance at the device-level to optimize the spend on bids.