



# Describing the distribution of engagement in an Internet support group by post frequency: A comparison of the 90-9-1 Principle and Zipf's Law



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## ABSTRACT

Sustainable online peer-to-peer support groups require engaged members. A metric commonly used to identify these members is the number of posts they have made. The 90-9-1 principle has been proposed as a 'rule of thumb' for classifying members using this metric with a recent study demonstrating the applicability of the principal to digital health social networks.

Using data from a depression Internet support group, the current study sought to replicate this finding and to investigate in more detail the model of best fit for classifying participant contributions.

Our findings replicate previous results and also find the fit of a power curve (Zipf distribution) to account for 98.6% of the variance.

The Zipf distribution provides a more nuanced image of the data and may have practical application in assessing the 'coherence' of the sample.

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## 1. Introduction

Online peer-to-peer support has many potential health benefits (Ziebland and Wyke, 2012). To date, systematic reviews have failed to find consistent evidence for the efficacy of online peer-to-peer support groups on health outcomes (Eysenbach et al., 2004; Griffiths et al., 2009). However, there is evidence that consumers value these groups (Horrigan et al., 2001) and there is increasing interest in identifying the key components of sustainable thriving online support groups (Young, 2013). It is generally agreed that one key component is highly engaged core members who contribute substantially to the community (Young, 2013). There is no consensus on what metrics should be employed to classify the contributions of members. Four studies have sought to identify highly engaged members in online peer-to-peer support groups using different combinations of metrics. These metrics include the number of posts made by members (Cobb et al., 2010; Jones et al., 2011; van Mierlo et al., 2012; van Mierlo, 2014), the number of threads initiated (Jones et al., 2011; van Mierlo et al., 2012), the number of different threads in which a member participates (Jones et al., 2011; van Mierlo et al., 2012), the level of connectedness to other members in the forum (Cobb et al., 2010) and time spent logged in (Jones et al., 2011). One metric common to them all was number of posts.

Recent research has used number of posts as a sole means of classifying members in Digital Health Social Networks (DHSN) with a peer-to-peer support group component (van Mierlo, 2014). The study investigated the 90-9-1 principle or the 1% rule. This rule describes a commonly reported phenomenon whereby the majority of content in an Internet community is produced by only 1% of the participants (referred to as 'superusers'), a minority of the content is produced by a further 9% of participants ('contributors') and 90% of people observe the content in the Internet community without actively participating ('lurkers') (Nielsen, 2014). The study sectioned the content attributed to these three groups and found that the sections contained 74.7%, 24.0% and 1.3% of the total posts in the DHSN respectively. It was concluded that the 90-9-1 principle applied to DHSN.

The DHSN study sought to verify the 90-9-1 principle rather than to determine the distribution which best fitted the data. Thus, the 90-9-1 principle may not provide the greatest accuracy in classifying participants in a DHSN. The aim of the current study is to further investigate the model of best fit for classifying participants in a DHSN, including but not limited to the 90-9-1 principle.

## 2. Method

This study used data from the peer-to-peer Internet support group – BlueBoard ([blueboard.anu.edu.au](http://blueboard.anu.edu.au)). BlueBoard is predominantly used for peer-to-peer discussion about Depression (38.8% of content). It also includes forums on Bipolar Disorder (18.4%), Generalised Anxiety Disorder (5.0%), general discussion (22.1%) and other topics (15.7%).

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**BlueBoard**

[Emergencies Help](#)

User Name  Remember Me?   
 Password

[Register](#) [FAQ](#) [Calendar](#) [Today's Posts](#)

**Welcome to BlueBoard!**  
 BlueBoard is an online community for people suffering from depression or anxiety, their friends and carers, and for those who are concerned that they may have depression or anxiety and want some support. We hope that this bulletin board will enable people to reach out and both offer and receive help. The main thing we want you to know is that you are not alone! In order to post messages you will first need to [register](#) with a made-up alias.  
**\*IMPORTANT\*** Please don't use a real name as part of your username or for privacy reasons we will have to disable your account. We just hate having to do this but protecting members' privacy is a really important aspect of BlueBoard. :) [Click here](#) to read more about usernames.

**Forum**  
[BlueBoard Notices](#)  
 Sub-Forums: [Rules and Consents](#) [BlueBoard Notices](#) [Emergencies Help](#) [New members: What happened to Fred Smith?](#)  
**Depression**  
 Sub-Forums: [Living with depression](#) [Taking care of ourselves](#)  
**Bipolar Disorder**  
 Sub-Forums: [Living with bipolar disorder](#) [Taking care of ourselves](#)  
**Generalised Anxiety**  
 Sub-Forums: [Living with generalised anxiety](#) [Taking care of ourselves](#)  
**Social Anxiety**  
 Sub-Forums: [Living with social anxiety](#) [Taking care of ourselves](#)  
**Panic Disorder**  
 Sub-Forums: [Living with panic disorder](#) [Taking care of ourselves](#)  
**Obsessive Compulsive Disorder**  
 Sub-Forums: [Living with OCD](#) [Taking care of ourselves](#)  
**Borderline Personality and Related Disorders**  
 Sub-Forums: [Living with borderline personality disorder](#) [Taking care of ourselves](#)  
**Eating Disorders**  
 Sub-Forums: [Living with an eating disorder](#) [Taking care of ourselves](#)  
**Caring for someone with a mental health problem**  
 Sub-Forums: [General](#) [Depression and Bipolar Disorder](#) [Anxiety Disorders](#) [Other disorders](#)  
**General**  
 Sub-Forums: [Click chat](#) [Having a laugh](#) [Creative corner](#) [Suggestion Box](#)

Fig. 1. BlueBoard homepage.

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