

# "Abu Dhabi Calling!" A Pilot Investigation of Spatial Patterns in Phone Directories

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Phone directories provide us with the general location of the inhabitants of cities at regular intervals, and they are an opportunity for a digital urban anthropology.

Before the rise of web listings, phone directories were the primary means of finding the contact information of personal and commercial telephone subscribers. The "Abu Dhabi Pilot Calling!" project builds on spatial humanities research that uses city directories for a data-driven approach to urban history. This pilot project attempted to understand the geographic nature of demographics in the capital city of the United Arab Emirates using 1972, 1985, and 1995 phone book directories from the **Frauke Heard Bey and David Heard collection at NYUAD library**. We digitized the letter 'A' across three years to investigate three questions:

- Could we locate the "street addresses" of the 1972 population of Abu Dhabi?
- Are different ethnicities **dominant** for telephone exchanges in Abu Dhabi?
- What are the markers of national origin or ethnicity ?

## Digitized Directories using ABBYY to Tabular Form

Name	Full Address	Latitude	Longitude	Address	PO Box	Phone number
Abee Grocery	Al Gaith Bldg., Abu Dhabi, UAE	24.4909695	54.363924	Al Gaith Bldg.	P. O. Box 942	41501
Alshirawi Trading	Al Othman Bldg., Abu Dhabi, UAE	24.3095243	54.4976842	Al Othman Bldg.	P. O. Box 811	41544
Abd El - Ghaffar I	Al-Hubaishl Bldg., Abu Dhabi, UAE	24.3512365	54.4954475	Al-Hubaishl Bldg.	P. O. Box 2210	41562
ALITALIA Italy's V	Sheikh Hamdan Street, Abu Dhabi, UAE	24.499406	54.377009	Sheikh Hamdan Stre -		41663
Asaad M. Shallat	Asaad M. Shallabi Bldg., Abu Dhabi, UAE	24.453884	54.3773438	Asaad M. Shallabi Bl	P. O. Box 145	41676
Abbas Dalloul	314 Central Market, Abu Dhabi, UAE	24.488852	54.3563142	314 Central Market	P. O. Box 399	41684
Alrashid Trading	Airport Road, Abu Dhabi, UAE	24.4657315	54.3758871	Airport Road	P. O. Box 735	41699

Figure 1: Tidy ABBYY OCR'ed data from 1972 phone book directory with geolocation

## A partial map of Abu Dhabi Phone Subscribers (1972)



Figure 2: 1972 Abu Dhabi population mapped on ArcGIS with outliers

## Results and Analysis

- **Quality of 1972 geolocation:** Even though automatic geocoding of the 1972 addresses generated data, the coordinates can be questioned. For instance, the directory dataset has entry ADMA House, Abu Dhabi, UAE, but on the map, it is mismatched with the present ADMA tower, Abu Dhabi.
- **Telephone exchange patterns:** The prefix phone code allocation of all residences in the Khalifa city had prefix code 61 whereas all the businesses in the Central Market started with 41 and 42.
- **Expatriate Community** The presence of Anglo family names in high frequency point to an Anglo expatriate community.
- **Change in the number of digits** UAE phone numbers incremented one digit in the 1980s (corresponding to a population increase from 235,000 to 1.39 million.)
- **Ethnicity and phone exchange 21** In 1985, South Asian Muslim males dominated phone numbers beginning in 21. Over one decade, non-South Asians joined the prefix 21. Such association with the ethnicity were identified with other prefix codes in the pilot study.



Figure 3: South Asian Muslim male first names dominates prefix 21 in 1985



Figure 4: Arabic Muslim male Community dominant in 21 in 1995



Figure 5: Anglo Expatriate Community in 1972

## Reflection and Further Research

This pilot study was conducted in limited time and only on the "A" letter. Interesting spatial results have been deduced. Some key questions remain at this point:

- What are the most efficient means of scaling up this project, digitizing and preparing 4.5M records of tabular data (deep learning models)?
- Is it possible to use third-party datasets to enhance the results?
- Was there regular patterns applied in increasing the length of the phone numbers??
- Is it viable to different modes of transliterate from a variety of non-English languages to deduce ethnicity?

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